

***Data Quality Assessment
Report for the
Post-Decontamination
Characterization of the
Contents of Tank WM-186 at
the Idaho Nuclear Technology
and Engineering Center Tank
Farm Facility***

July 2004

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Technology and Engineering Center Tank Farm
Facility**

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ABSTRACT

This report documents the assessment of the data collected during the cleaning of Tank WM-186 at the Idaho National Engineering and Environmental Laboratory Idaho Nuclear Technology and Engineering Center Tank Farm Facility. The data assessed in this report were generated from the sample analysis of residual tank liquids remaining after decontamination. Because decontamination activities reduced the volume of solids remaining in the tank to less than 15% by volume of the total sample collected, the solids portion of the samples collected were not analyzed. Data from the sample analysis of the liquids from the tank vault sumps or diversion valve boxes are not analyzed in this document, but will be addressed in a subsequent report. The residual tank liquids data were assessed to determine whether the concentrations of regulated constituents were reduced below the action levels necessary for clean closure. Radionuclide data were compared with an established inventory. The analysis shows all radionuclide activities are less than the inventory values modeled in the tank performance assessment. The analysis also shows that clean closure action levels were achieved for the chemical constituents in the tank. Based on the data analysis, decisions associated with these data can be made with a high degree of confidence.

FOREWORD

Tank WM-186 is one of 15 tanks at the Idaho National Engineering and Environmental Laboratory Idaho Nuclear Technology and Engineering Center Tank Farm Facility. The cleaning of Tank WM-186 was performed as part of the Resource Conservation and Recovery Act (RCRA) clean closure and Department of Energy (DOE) high-level waste tank closure activities underway at the Idaho Nuclear Technology and Engineering Center Tank Farm Facility. The data were compared to three criteria:

- For RCRA clean closure, the data were assessed to determine whether the concentrations of RCRA-regulated constituents were reduced to levels below the action levels specified for clean closure in *Idaho Hazardous Waste Management Act/Resource Conservation and Recovery Act Closure Plan for Idaho Nuclear Technology and Engineering Center Tanks WM-184, WM-185, and WM-186* (DOE-ID 2004). This analysis indicates clean closure action levels were not exceeded by liquid contaminants in Tank WM-186. Because the samples collected contained less than 15% solids by volume, the solids portion of the samples collected were not analyzed and compared with the action levels for regulated constituents.
- For DOE high-level waste tank closure, the radionuclide data were compared with the radionuclide concentrations that were used in the *Performance Assessment for the Tank Farm Facility at the Idaho National Engineering and Environmental Laboratory* (DOE-ID 2003). These values were based on sampling data and predicted values from the ORIGEN numerical model. This model is used to predict the radionuclides and relative values in waste streams. An inventory of radionuclides that remains in the tanks after decontamination was prepared for the performance assessment and is used in this document as an indicator of compliance with DOE radionuclide performance objectives.
- The data collected from sampling the post-decontamination, residual, liquid contents of Tank WM-186 were assessed against the criteria for data quality specified in the *Sampling and Analysis Plan for the Post-Decontamination Characterization of the WM-184, WM-185, and WM-186 Tank Residuals* (INEEL 2003).

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ACRONYMS

AL	action level
CAS	Chemical Abstract Service
CFR	Code of Federal Regulations
CV	coefficient of variation
<i>df</i>	degree of freedom
DOE	Department of Energy
DQA	data quality assessment
DQO	data quality objective
HWMA	Hazardous Waste Management Act
ICP-MS	inductively coupled plasma-mass spectrometry
LCL	lower confidence limit
NA	not applicable
PA	performance assessment
PCB	polychlorinated biphenyl
RCRA	Resource Conservation and Recovery Act
SAP	sampling and analysis plan
SVOC	semivolatile organic compound
TFF	Tank Farm Facility
UCL	upper confidence limit
USC	United States Code
VOC	volatile organic compound

Data Quality Assessment Report for the Post-Decontamination Characterization of the Contents of Tank WM-186 at the Idaho Nuclear Technology and Engineering Center Tank Farm Facility

1. INTRODUCTION

This report assesses the quality of data generated from liquid tank residuals collected following decontamination of Tank WM-186 at the Idaho Nuclear Technology and Engineering Center Tank Farm Facility (TFF). The purpose of this data quality assessment (DQA) report is to

1. Verify that correct assumptions were made in the development of the data quality objectives (DQOs) about the variance of the sample population
2. Confirm that the number of samples collected was adequate
3. Compare the mean concentration (as represented by the upper confidence limit [UCL]) of Resource Conservation and Recovery Act (RCRA) (42 United States Code [USC] 6901 et seq., 1976) constituents to approved action levels (ALs) listed in the *Idaho Hazardous Waste Management Act/Resource Conservation and Recovery Act Closure Plan for Idaho Nuclear Technology and Engineering Center Tanks WM-184, WM-185, and WM-186* (DOE-ID 2004)
4. Compare the mean concentrations of radionuclides to the inventory prepared for the *Performance Assessment for the Tank Farm Facility at the Idaho National Engineering and Environmental Laboratory* (DOE-ID 2003)
5. Determine if the distributional assumptions have been met.

In general, DQA provides a scientific and statistical evaluation of data to determine if the collected data are of the right type, quality, and quantity to support their intended use. The DQA process is designed around the key idea that data quality, as a concept, is only meaningful when it directly relates to the intended use of the data (EPA 2000a). Two primary questions can be answered using the DQA process:

1. Does the quality of the data permit decisions to be made with the desired degree of confidence?
2. How well can the sampling design be expected to perform over a wide range of possible outcomes? That is, can the sampling design strategy be expected to perform well in a similar study with the same degree of confidence even if the actual measurements are different than those obtained in the present study?

The first question addresses the immediate needs of the study. If the assessment shows that the data are of sufficient quality, then the decision-maker can make decisions using unambiguous data with the desired level of confidence (specified during data collection planning). However, if the data do not provide sufficiently strong evidence to support one decision over another, then appropriate data analysis can alert the decision-maker to the degree of ambiguity in the data. If this is the case, an informed decision can be made about how to proceed. For example, based on the data obtained, more data may be

collected or the decision-maker may make a decision knowing there is a greater-than-desirable uncertainty in the decision.

The second question addresses the potential future needs of the study. After the DQA is completed, personnel can determine how well the sampling design may perform at a different location given that different environmental conditions and outcomes may exist. Because environmental conditions vary from location to location, it is important to examine the sampling design over a large range of possible settings to ensure that the design will be adequate in other scenarios.

Evaluation of collected data, referred to as the data life cycle, consists of three steps: planning, implementation, and assessment. The planning phase consists of documenting the data needs and plans for data collection using the DQO process (EPA 2000b). The DQOs define the qualitative and quantitative criteria for specifying the sampling procedure and establish the desired level of confidence for decision-making. The DQOs for this project are documented in the associated sampling and analysis plan (SAP) (INEEL 2003). The implementation phase consists of collecting the necessary data according to the SAP. Data assessment consists of both data validation (to make sure that all sampling and analysis protocols were followed) and the use of the validated data set (to determine if the data quality is satisfactory for making the decisions specified in the SAP).

The following steps of the DQA process are discussed in this DQA report:

1. Review the DQOs and sampling design
2. Conduct a preliminary data review
3. Select a statistical test
4. Verify the assumptions of the selected test
5. Draw conclusions from the data.

2. REVIEW OF THE DATA QUALITY OBJECTIVES AND SAMPLING DESIGN

The DQOs clearly define the principle study questions and issues being addressed and develop the approach that will be taken to resolve that problem. The DQOs consist of developing a problem statement and a decision statement, defining the decision inputs, defining study boundaries, developing a decision rule, establishing decision error limits, and optimizing the design.

1. Problem Statement: Demonstrate that tank decontamination activities have resulted in closure performance objectives being met.
2. Decision Statement: Determine whether decontamination of the TFF tank systems reduced the concentrations of constituents or properties (i.e., pH) of concern in the residuals remaining in the TFF system components below closure performance standards; if not, further decontamination may be necessary or the Hazardous Waste Management Act (HWMA) (State of Idaho 1983)/RCRA (42 USC 9601 et seq., 1976) landfill standards for closure must be met. Department of Energy (DOE) requirements also must be met to close the tanks in place.
3. Decision Inputs: Concentrations of hazardous constituents and radionuclides present in the tanks after decontamination.
4. Study Boundaries:
 - a. Spatial Boundaries: Residual decontamination fluids remaining in the tanks following decontamination. The data assessed in this report were generated from the sample analysis of residual tank liquids remaining after decontamination. No data from the sample analysis of residual solids or the liquids from the tank vault sumps or diversion valve boxes are analyzed in this report. Data assessment of sample analysis of ancillary equipment will be addressed in a subsequent report.
 - b. Temporal Boundaries: From the onset of decontamination to completion of decontamination. The length of time can vary from tank to tank. Decisions made concerning achievement of closure performance standards will apply for a minimum of 100 years of DOE institutional control.
 - c. Scale of Decision-Making: The assumptions made in developing the performance assessment (PA) (DOE-ID 2003) will specify the scale of decision-making.
 - d. Practical Constraints: It is not possible to obtain samples from all areas of the tank because of restricted access points and limitations on the available sampling methods. However, the rinsate can be thoroughly agitated prior to sampling so this constraint should not hamper the ability to obtain a simple random sample of the tank contents.
5. Decision Rule: The parameter of interest is the mean concentration of the constituents of concern within the study boundaries. The decision rules are:
 - a. *If* the true mean (as estimated by the 95% UCL of the sample mean) concentration of any applicable hazardous waste constituent detected from the tank is greater than or equal to the maximum concentration of contaminants for the toxicity characteristic listed in 40 Code of Federal Regulations (CFR) 261.24 (2004), or *If* the true mean pH (as estimated by the lower confidence limit [LCL] and UCL of the 95% confidence interval of the sample mean for pH)

of TFF residuals in any individual tank or vault sump exhibit the characteristic of corrosivity, *then* either additional decontamination steps will be undertaken or closure to HWMA/RCRA landfill standards will be considered.

- b. If the true mean (as estimated by the 95% UCL of the sample mean) concentration of any hazardous constituent detected in total constituent analyses of the TFF residuals is greater than or equal to the AL specified in the closure plan, *then* additional decontamination steps may be undertaken. Closure to HWMA/RCRA landfill standards will be considered at final closure of the TFF.
 - c. If the concentrations of hazardous constituents indicate that the closure performance standards have been met, *then* the TFF will be closed under a HWMA/RCRA clean closure.
6. Decision Error Limits: The outputs for the decision error limits are the null and alternative hypotheses and a quantification of the allowable error rates. The null hypothesis is “The concentration of at least one hazardous or radioactive constituent in TFF residuals following decontamination is equal to or exceeds action or inventory levels.” Conversely, the alternative hypothesis is “The concentrations of all hazardous or radioactive constituents in TFF residuals following decontamination are less than the specified action or inventory levels.” The lower boundary of the gray region (Δ) is set at 80% of the AL for all constituents of concern. Using the stated null hypothesis, the upper boundary of the gray region is always the constituent-specific AL. For pH, the gray region is bounded on one side by 2.0 and 12.5 (the ALs) and on the other side by 2.1 and 12.4, respectively. In the case of acidic conditions (low pH), the “lower boundary” of the gray region is actually a pH value greater than the action limit because the “lower boundary” of the gray region is always in a direction away from the action limit that would result in rejection of the null hypothesis if the true mean value was equal to that value. That is, the gray region is that range of values where controlling false negative decision error is deemed unimportant relative to the cost of controlling that error. The chance of a false-positive decision error (α) and the chance of a false-negative decision error (β) will both be set at 5%.
7. Design Optimization: A simple random sampling method was used to obtain samples. The standard deviation (σ) was estimated to be 10% of the AL. The validity of this assumption is assessed later in this DQA report. Given the chosen α , β , and Δ in conjunction with the estimated value for σ , a sample size (n) of five was selected using Equation (1):

$$n = \frac{(z_{1-\alpha} + z_{1-\beta})^2 \sigma^2}{\Delta^2} + \frac{1}{2} z_{1-\alpha}^2 \quad (1)$$

where

- n = the appropriate number of samples to collect to satisfy the DQOs
- z_k = the z value for the k^{th} quantile of the standard normal distribution (from statistical tables)
- α = false-positive rate (5% or 0.05)
- β = false-negative rate (5% or 0.05)
- σ = estimated standard deviation of the population

Δ = minimum detectable difference (the difference between the AL and the value at which the decision-maker wants to specify a false-negative decision error rate; in this case, Δ is 20% of the constituent-specific AL).

Equation (2) shows the solution of this formula for the Tank WM-186 sampling and analysis activity:

$$n = \frac{(1.645 + 1.645)^2 (10)^2}{(20)^2} + \frac{1}{2} (1.645)^2 = 4.06 \quad (2)$$

Based on the results of Equation (2), five samples of the residual decontamination fluids remaining in the tank were collected for the applicable analyses.

3. PRELIMINARY DATA REVIEW

The purpose of the preliminary data review is to examine the data using graphical methods and numerical summaries to gain familiarity with the data and achieve an understanding of the “structure” of the data. A preliminary data review should be performed whenever data are used, regardless of the data use. This type of examination allows for identification of appropriate approaches for further analysis and limitations of the data. The two main approaches to a preliminary data review are: (1) calculation of basic statistical quantities (or summary statistics) and (2) graphical representations of the data. Appendixes A–E of this report provide the graphical representation of Tank WM-186 data. The calculated summary statistics will be discussed in this section, and the graphical review of the data will be discussed in Sections 7.1–7.5 when distribution of the data is assessed.

The summary statistics that were calculated for the detected constituents were measures of center (mean and median) and measures of spread (standard deviation, coefficient of variation [CV], interquartile range, and range). One measure that is of primary interest is the center of the data. The average (\bar{x}), or the mean, is the most commonly used measure of the central tendency of the data. However, it can be heavily influenced by outliers and by asymmetric data. The mean is calculated using Equation (3):

$$\bar{x} = \frac{\sum_{i=1}^n x_i}{n} \quad (3)$$

where

\bar{x} = mean

n = number of observations

x_i = i^{th} observation.

The median is the preferred measure of the center of the data if outliers are present in the data or if the data are skewed. The median is the observation such that 50% of the data lie below the median and 50% of the data lie above the median. If the data are symmetric, the mean and the median will be equal to each other.

Another quantity of interest is the spread of the data. The standard deviation (s) is the most commonly used measure of spread. One reason for this is that it is fairly easy to interpret and is used in many other statistical methods. Because it is calculated using the average, it is also sensitive to outliers and to data that are not symmetric. The standard deviation is calculated using Equation (4):

$$s = \sqrt{\frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n-1}} \quad (4)$$

where

s = standard deviation

n = number of observations

x_i = i^{th} observation

\bar{x} = mean of the observations.

The CV was also calculated for each detected analyte. The CV is a relative measure of variation. That is, it is a measure of the standard deviation relative to the mean, expressed as a percentage. This measure provides a way to directly compare the standard deviations of two different data sets that may otherwise not be directly comparable. However, it is important to note that the mean of the data may be very close to zero or very far away from zero and the spread may be independent of the distance of the mean from zero. Therefore, no firm guidelines have been established for interpreting the CV. The formula for calculating the CV is:

$$CV = \frac{s}{\bar{x}} \times 100\% \quad (5)$$

The interquartile range is a measure of spread that is not influenced by outliers. It is calculated by subtracting the first quartile from the third quartile. The first quartile is the 25th percentile of the data and the third quartile is the 75th percentile of the data. The interquartile range is a preferred measure of spread when extreme outliers exist in the data. Otherwise, the standard deviation is the preferred measure of spread.

Another measure of spread is the range of the data. The range is calculated by subtracting the smallest value in the data from the largest value. It can be a valuable piece of information in characterizing the spread of the data but can be deceptively large if the data contain any outliers. Therefore, the data should always be examined for outliers when the range is used as a summary statistic.

The five-number summary was calculated for pH and each of the detected inorganic, organic, and radionuclide analytes. The five-number summary is a presentation of the minimum value, the first quartile, the median, the third quartile, and the maximum value of the data. This summary provides non-parametric information about the general spread and pattern of the data.

It is often difficult to read a table of numerical summary statistics and identify the degree of symmetry or normality of the data. Therefore, the graphical representations are shown in Appendixes A–E to aid the data user in assessing the symmetry and normality of the data collected. Graphical representations of the data include boxplots and normal-quantile plots. Boxplots are a way of graphically viewing the five-number summary. The plot consists of a central box with a line or other mark inside of the box. Two lines come out of the ends of the box in either direction. The line, or mark, inside the box identifies the median, the edges of the box are located at the two quartiles, and the extreme ends of the lines represent the largest and smallest observations within 1.5 IQR from the box, which are the minimum and maximum values in this study. This type of plot allows for a quick and comprehensive analysis of the symmetry of the data. It can be easily determined if the data are symmetric, right-skewed, or left-skewed. Right-skewed data have a lengthened tail at the higher values of the distribution. This tail pulls the mean toward it, causing the mean to be high relative to the center of the data. This makes it more likely that a tank will be declared insufficiently decontaminated when, in fact, it is sufficiently clean. Left-skewed data

have a lengthened tail at the lower values of the distribution. This tail pulls the mean toward it causing the mean to be lower than the center of the data. Left-skewed data will cause the UCL to be low-biased, making it more likely to show the tank is clean when, in fact, the concentration of that analyte exceeds the AL.

The normal-quantile plot is a plot that is used to determine if the data follow a normal distribution. If the data follow a normal distribution then the points on the graph will lie along a straight line. Any deviations from a straight line are indicative of deviations from normality. If the tails bend away from the line at only one end of the line, then the data are asymmetric. If the data veer away from the line at both ends, then the tails of the distribution are either too heavy or too light to assume a normal distribution. It is important to note that no real world data set is perfectly normal so a certain amount of deviation from the line is to be expected, even in data that are sufficiently normal to perform the desired analysis.

The following sections provide an overall analysis of the data pertaining to the samples collected from the post-decontamination tank contents. Because decontamination activities reduced the volume of solids remaining in the tank to less than 15% by volume of the total sample collected, the solids portion of the samples collected were not analyzed. Samples taken from Tank WM-186 were analyzed for inorganic, organic, and radionuclide constituents.

Each type of analyte (metals, anions, organic constituents, pH, and radionuclides) is discussed separately in Sections 7.1–7.5. The impact of laboratory performance on the data quality is discussed, and detected analytes are examined statistically.

4. STATISTICAL TEST SELECTION

Once the preliminary data review has been completed, an appropriate statistical hypothesis test may be selected to answer the question(s) for which the data were collected. The data are analyzed to determine whether the data meet the assumptions of the desired test(s).

One of the primary requirements of many hypothesis tests is that the distribution of the sample mean has a normal distribution. Tests that require the assumption of normality are generally more efficient than non-parametric tests (i.e., tests that do not require the data to follow a specific distribution). That is, a test that requires the sample mean to have a normal distribution can provide more accurate and reliable answers with fewer data points than a test that does not require the data to conform to a specific distribution. If the data have a normal distribution, then the sample mean will also have a normal distribution. Data not demonstrating a normal distribution can be transformed and used if the transformed data are normally distributed. However, if the data do not have a normal distribution and cannot be transformed to achieve normality, the sample mean may still have a normal distribution. The Central-Limit Theorem states that the distribution of the sample mean will be normal, regardless of the distribution of the data, if the sample size is sufficiently large. The more the data deviate from the normal distribution, the larger the sample size must be to ensure that the distribution of the sample mean is normal. Bootstrapping is a simulation technique that can be used to assess the distribution of the sample mean. If data are not normal in distribution and normality cannot be achieved through transformation, bootstrapping will be used to assess the distribution of the sample mean.

Non-parametric tests are most appropriate if the sample mean does not follow a normal distribution and an appropriate transformation cannot be found. Although they do not require the data to exhibit a normal distribution, most non-parametric hypothesis tests also have assumptions that must be met. One of the most common assumptions for non-parametric tests is that the data have a symmetric distribution. The assumptions of a selected hypothesis test, whether parametric or non-parametric, must be verified before the test is performed on the data.

The primary questions to be answered in relation to the post-decontamination contents of Tank WM-186 are:

- Does the mean concentration of any constituent of concern exceed the specified AL or radionuclide inventory?
- Do the data support the assumptions of variance (standard deviation squared) and normal distribution?

The appropriate test to answer the first question compares the sample mean to a constituent-specific AL. Three primary tests are appropriate for answering this type of question: the one-sample z -test, Student's one-sample t -test, and the Wilcoxon signed rank test.

The z -test requires: (a) knowledge of the population standard deviation (σ) and (b) that the sample mean follows a normal distribution. Because the population standard deviation for each constituent concentration in the post-decontamination contents of Tank WM-186 is not known, the z -test will not be considered further. The t -test allows the use of the sample standard deviation (s), which is an estimate of σ . The t -test also requires that the sample mean follows an approximate normal distribution. It is important to note that if the data follow a normal distribution, the sample mean will also have a normal distribution (as shown by the law of large numbers). However, if the data do not follow a normal distribution, the sample mean will still follow a normal distribution if the sample size is sufficiently large (as shown by the Central-Limit Theorem). The Wilcoxon signed rank test is a non-parametric test that

compares a sample mean to an AL but does not require the data to follow a normal distribution. The primary assumption for this test is that the data are symmetric. If the data are analyzed and found to be neither normally distributed nor symmetric, the data may be transformed. Data are transformed by performing the same operation on each data point (such as taking the natural logarithm of each observation). If the transformed data have a normal distribution or are symmetric, then the appropriate test can be performed on the transformed data. If the UCL of an analyte for which the data has been transformed is desired, it can be calculated using the transformed data. The AL can then be transformed using the same function and directly compared to the UCL within the transformed space. If an appropriate transformation cannot be found to achieve normality in the data, bootstrapping will be done to determine if the sample mean follows a normal distribution despite the non-normality of the data.

Because the *t*-test allows use of the sample standard deviation (*s*) and is a very powerful test for small data sets, the *t*-test was chosen as the most desirable means for testing the null hypothesis. After selecting a statistical test, it is necessary to verify the assumptions of the test selected. These assumptions are examined in Section 5.

5. VERIFICATION OF THE ASSUMPTIONS FOR THE SELECTED HYPOTHESIS TEST

This section examines the underlying assumptions of the statistical hypothesis test in light of the data collected. Both parametric and non-parametric tests require the samples to be independent of each other, and this assumption should be verified. In addition, to select the appropriate test, the distributions of the data obtained for each analyte need to be evaluated. Parametric tests, which require the sample mean to be normally distributed, can provide more accurate and reliable answers with fewer data points than non-parametric tests and, therefore, are the preferred tests. Also, if the data have a normal distribution, the sample mean will also follow a normal distribution. Consequently, it must first be determined if the data follow a normal distribution or if they can be transformed to follow a normal distribution. This is done using graphical methods such as histograms and normal-quantile plots. Statistical tests such as the Shapiro-Wilk W test or the χ^2 test for distributions can be used to determine if the data follow a normal distribution, but they have their limitations. If the data set is large, even data that are very close to normal in distribution may not pass the test. If the data set contains a small number of data points, it can be difficult for distributional tests to detect deviations from normality in the data. However, the standard deviations for analytes in Tank WM-186 are small compared to the ALs, and the observed concentrations are less than the ALs to such a degree that five samples are adequate for confidently declaring Tank WM-186 sufficiently clean for closure.

If the data are not normal in distribution and cannot be transformed to achieve normality, bootstrapping will be performed on the data to determine if the sample mean still follows a normal distribution. Bootstrapping is a technique in the family of Monte Carlo methods that resamples the observed data to obtain more information about the population. In the case of the rinsate data, the observed data for the analyte in question will be sampled, with replacement, five times. A sample mean will then be computed from this “new” data set. This process will be repeated 1,000 times to obtain 1,000 sample means. The sample means will then be plotted using a histogram and a normal-quantile plot to determine if the sample means follow a normal distribution. If the sample mean appears to be normal, the data meet the normality requirements for the t -test. (For further details on bootstrapping see *An Introduction to the Bootstrap* [Efron and Tibshirani 1994].)

In the analysis of the Tank WM-186 rinsate data, graphical methods and the Shapiro-Wilk W test were used to assess normality. Boxplots and normal-quantile plots of the data were prepared using S-Plus 2000 (Insightful Corporation 2000) software. Analyse-It software (Analyse-It 2003) was used to perform the Shapiro-Wilk W test calculations. Because only five samples were taken from the tank, histograms were not very informative. Normal-quantile plots were the primary graphical method used to evaluate whether the data exhibit a normal distribution. These plots are presented in Appendixes A–E of this report. The assessment of normality of the data is discussed in the following sections.

Since the primary objective of this statistical analysis is to determine if the mean concentration of a specified analyte is less than its associated AL, the following criteria have been developed in dealing with deviations from normality:

- If the Shapiro-Wilk W test indicates that the data are normally distributed at the $\alpha = 0.05$ level and the summary statistics and plots indicate that the data are symmetric, then the t -test will be performed on the raw data. A transformation may be attempted to achieve data that are more comfortably normal in distribution.
- If the Shapiro-Wilk W test conclusively shows that the data are normally distributed (the p -value is comfortably greater than 0.05), but the boxplot and other summary statistics indicate that the data

might be right-skewed, then the raw data will be used for the *t*-test. However, if the data in this situation fail the *t*-test, a transformation that can make the data closer to normal in distribution will be sought and the test will be repeated.

- If the *p*-value for the Shapiro-Wilk W test is close to or less than 0.05 and the data are left-skewed, then a transformation will be sought to bring the distribution into the acceptable range of normality.
- If the data are right-skewed and the *p*-value for the Shapiro-Wilk W test is less than 0.05, indicating that the data are non-normal, then an appropriate transformation will be sought for the data.
- If an appropriate transformation cannot be found then the data will be analyzed on a case-by-case basis to determine if it appears that the AL has been exceeded. This will also be done if the data are left-skewed and a suitable transformation cannot be found.

The results of the Shapiro-Wilk W test are reported for all of the reported results as well as for any successful transformations in Sections 7.1–7.5. Results for unsuccessful transformations are not reported because as many as 25 transformations were attempted for each analyte that exhibited non-normality. It is also important to note that the Wilcoxon signed rank test will not be considered for data that exhibited non-normality and asymmetry because symmetry is a basic assumption of the test. It is possible to determine how the type of asymmetry will affect a *t*-test, but it is not as clear how asymmetry will affect the results of the Wilcoxon signed rank test.

5.1 Verification of Standard Deviation Assumption

The SAP associated with this project assumed a standard deviation of 10% of the AL to estimate the sample size necessary to achieve the desired α and β . The ratio (standard deviation)/(AL) was measured for each detected analyte. The highest ratio was 0.34% for ^{125}Sb . This implies that the standard deviation assumption was met for each of the other analytes and the chosen levels of α and β were, in fact, conservative estimates of true levels of α and β achieved using the data sets for this analysis.

Table 1 provides the complete list of standard deviation to AL comparisons for detected metals, anions, and organic analytes. Analytes for which no AL exists were excluded from the table. Likewise, Table 2 provides the comparison of standard deviation to PA modeled inventory values for detected radionuclides.

Table 1. Summary of comparison of standard deviation to action level for organic and inorganic analytes.

Analyte	Standard Deviation	Action Level	Percentage
Metals	($\mu\text{g/L}$)	($\mu\text{g/L}$)	
Aluminum	248	3,100,000	0.01%
Cadmium	1.7	610	0.27%
Chromium	4.8	900	0.53%
Copper	0.58	600,000	0.00%
Iron	26.3	1,700,000	0.00%
Manganese	18.1	490,000	0.00%
Mercury	2.61	160	1.63%
Nickel	6.14	440,000	0.00%
Silver	9.83	3,000	0.33%
Zinc	0.93	1,700,000	0.00%
Anions	(mg/L)	(mg/L)	
Fluoride	0.16	770,000	0.00%

Table 2. Summary of comparison of standard deviation to inventory value for radionuclides.

Analyte	Standard Deviation	Inventory Level	Percentage
Radionuclides	(pCi/L)	(pCi/L)	
^{241}Am	4.62E+02	3.60E+07	0.00%
^{125}Sb	5.05E+03	1.49E+06	0.34%
^{60}Co	9.50E+02	1.40E+07	0.01%
^{134}Cs	4.77E+02	1.21E+06	0.04%
^{137}Cs	6.73E+05	1.15E+11	0.00%
^{154}Eu	4.92E+03	1.83E+08	0.00%
^3H	3.71E+02	1.61E+07	0.00%
^{129}I	6.35E+00	7.44E+04	0.01%
^{94}Nb	3.32E+03	3.44E+06	0.10%
^{63}Ni	1.47E+03	8.70E+07	0.00%
^{237}Np	2.86E+01	3.43E+05	0.01%
^{238}Pu	3.82E+04	5.70E+08	0.01%
$^{239/240}\text{Pu}$	5.81E+03	7.05E+07	0.01%
^{241}Pu	2.84E+04	4.24E+08	0.01%
^{99}Tc	4.85E+02	2.99E+07	0.00%
Total Sr	8.12E+05	8.15E+10	0.00%

5.2 Verification of Independence Between Risers

One of the primary assumptions for performing the *t*-test is that the samples are independent from one another. The sampling method that was used ensured that the samples that were retrieved from each of the risers were independent of the riser from which they were taken. The contents of the tank were thoroughly mixed and then one sample was taken from each of the risers. Then the contents of the tank were thoroughly agitated again and a sample was taken from each of two randomly selected risers. Since the rinsate came in contact with all surfaces of the tank during agitation and sampling was completed quickly after agitation, each sample had equal chance of being selected regardless of which riser it was collected from. Therefore, it can be assumed that the sample was truly a simple random sample and that the samples were indeed independent from one another and the location from which they were collected.

6. IMPLEMENTATION OF THE STATISTICAL TEST

If the preliminary data analysis and the evaluation of test assumptions indicate that the *t*-test may be appropriately applied to determine if the mean concentration of any constituent of concern exceeds its specified AL, then the test will be applied to the data. The review of the data relative to distributional assumptions will be performed in Sections 7.1–7.5 and will show that the assumption was adequately met for all data except as noted.

The DQOs for the study use a conservative statistic to estimate the population mean. Specifically, the decisions statements for the project specify, “*If* the true mean (as estimated by the 95% UCL of the sample mean) concentration of any hazardous constituent...” These decision statements allow a simple comparison of the 95% UCL of the mean to the AL to make decisions. The DQOs of the study also specify a desired rate for α of 5%. The confidence level for a UCL is equal to $(1 - \alpha)*100\%$. This means that 95% of all UCLs generated from all samples sizes of five will be less than the action limit if the mean concentration of the hazardous constituent in the tank is less than the AL. The 95% UCL can be thought of as a conservatively high estimate of the population mean. The comparison of the 95% UCL to the AL is a way of performing the *t*-test.

The UCL of the sample mean is calculated using Equation (6):

$$UCL = \bar{x} + t_{1-\alpha, df}^* \frac{s}{\sqrt{n}} \quad (6)$$

where

\bar{x} = sample mean.

$t_{1-\alpha, df}^*$ = *t*-statistic for the confidence level, $(1 - \alpha)*100\%$, and degree of freedom, df . In this case, the confidence is $(1 - 0.05)*100\% = 95\%$ and the dfs are $n - 1 = 4$. From statistical tables, this corresponds to a value of 2.132 (or 2.776 for pH as explained below).

s = sample standard deviation.

n = number of samples taken.

The 95% LCL is also of importance to analyzing the pH. Because the pH has ALs for both high pH and low pH, it is necessary to determine if the pH is less than the LCL. Because both the LCL and the UCL are important, the *t*-value for the LCL and UCL will be determined with $\alpha/2$ instead of α to ensure that the total probability of a false-positive decision error occurring is α rather than $2*\alpha$. The LCL is compared to a pH of 2 to ensure that the true mean is greater than 2 at the specified degree of confidence. The LCL is calculated using Equation (7):

$$LCL = \bar{x} - t_{1-\alpha/2, df}^* \frac{s}{\sqrt{n}} \quad (7)$$

where

\bar{x} = sample mean.

$t_{1-\alpha/2, df}^*$ = t -statistic for degree of confidence, $(1 - \alpha/2) * 100\%$, and degree of freedom, df . In this case, the confidence is $(1 - 0.025) * 100\% = 95\%$ and the df s are $n - 1 = 4$. Because the LCL and the UCL are being compared to an AL, $\alpha/2 = 0.025$ is used to determine the appropriate t -value. From statistical tables, this corresponds to a value of 2.776.

s = sample standard deviation.

n = number of samples taken.

The UCLs used to estimate the population mean, ALs, and decisions about whether or not the ALs may have been exceeded for each of the detected organic and inorganic constituents will be presented in Sections 7.1–7.3. The LCL will also be presented for pH to ensure that neither AL was exceeded. The results for pH are included in Section 7.4.

No specific regulatory thresholds relative to the activity (i.e., concentrations) exist for the radionuclides left in any one tank after decontamination. Rather, the total inventory of radionuclides remaining in all closed components of the TFF will be evaluated following completion of the TFF decontamination efforts. The PA (DOE-ID 2003) conducted to address the DOE Order 435.1 (2001) closure requirements provides an estimate of acceptable radionuclide concentrations in the liquids remaining in each tank following decontamination. While these modeled levels are not the basis for a decision such as continuing to clean a tank, the modeled values required to meet DOE closure standards can be compared with the levels achieved through decontamination efforts. Because of this, hypothesis testing is not required to make decisions concerning whether decontamination of Tank WM-186 may cease; however, hypothesis testing using the modeled value as the AL provides information on the decontamination effort for the radionuclides. Section 7.5 provides the UCLs for radionuclides and compares them with the PA modeled inventory (DOE-ID 2003).

7. NUMERICAL RESULTS OF DATA ANALYSIS

This section provides the results for the preliminary data analysis, verification of test assumptions, and the test results for each of the constituents and radionuclides of concern. Each type of analyte will be presented in its own section for ease of reference.

7.1 Data Assessment for Metals

This section will provide all of the preliminary data analysis, normality verification, and test results for the metals detected in the tank residuals. Data generated from these analyses were validated in accordance with technical procedures, and data validation flags were assigned to results based on laboratory performance on associated quality control analyses. Several data points were assigned the validation flag “U” (undetected) based on comparable blank levels. The usability of the metals data was not negatively impacted by the assigned validation flags (Portage Environmental, Inc. 2004a). Table 3 lists the metals that were detected in the tank residuals.

Metals that were not detected in tank residuals will not be discussed further in this document. Magnesium was detected in only one of the five samples. The detected value is 94.5 µg/L but has no AL associated with it. Therefore, it will not be further discussed in this section.

Table 3. Metals detected in the Tank WM-186 liquid residuals.

Detected Metals		
Aluminum	Iron	Potassium
Cadmium	Magnesium ^a	Silver
Calcium	Manganese	Sodium
Chromium	Mercury	Zinc
Copper	Nickel	

a. Analyte was detected in only one sample; therefore, insufficient data exist to perform statistical analysis of the data set for this analyte.

7.1.1 Preliminary Data Analysis for Metals Data

The preliminary data analysis consists of several statistical quantities of interest and the five-number summary for the metals. In Table 4, the measures of central tendency and spread for metals are listed. Table 5 provides the five-number summary for each of the detected analytes. Examination of the data shows that the data for aluminum, iron, and potassium are right-skewed. None of the data are left-skewed. The associated boxplots and normal-quantile plots are in Appendix A. The degree of this asymmetry will be discussed further in the following section when the normality of the data is assessed. Laboratory results and associated validation flags for metals data presented in this DQA are listed in Appendix F.

Table 4. Measures of central tendency and spread for metals detected in the Tank WM-186 liquid residuals.

Analyte	Mean ($\mu\text{g/L}$)	Median ($\mu\text{g/L}$)	Standard Deviation ($\mu\text{g/L}$)	Coefficient of Variation (%)	Interquartile Range ($\mu\text{g/L}$)	Range ($\mu\text{g/L}$)
Aluminum	435	368	248	57.01	51.0	648
Cadmium	4.3	3.9	1.7	39.37	1.0	4.6
Calcium	175	136	86.7	49.62	74.0	220
Chromium	9.8	8.8	4.8	48.60	1.4	13
Copper	2.2	2.2	0.58	26.31	0.20	1.6
Iron	28.6	12.8	26.3	92.05	48.2	50.9
Manganese	30.6	23.7	18.1	59.06	8.80	47.7
Mercury	17.0	17.1	2.61	15.38	1.10	7.10
Nickel	12.2	9.80	6.14	50.38	3.00	15.9
Potassium	826	677	248	30.02	414	514
Silver	37.6	31.5	9.83	26.14	14.6	21.4
Sodium	1,960	1,580	793	40.40	840	1,970
Zinc	5.2	5.3	0.93	17.68	0.60	2.5

Table 5. Five-number summary of metals detected in the Tank WM-186 liquid residuals.

Analyte	Minimum Value ($\mu\text{g/L}$)	First Quartile ($\mu\text{g/L}$)	Median ($\mu\text{g/L}$)	Third Quartile ($\mu\text{g/L}$)	Maximum Value ($\mu\text{g/L}$)
Aluminum	212	341	368	392	860
Cadmium	2.1	3.8	3.9	4.8	6.7
Calcium	91.8	130	136	204	312
Chromium	4.4	8.5	8.8	9.9	18
Copper	1.5	2.0	2.2	2.2	3.1
Iron	7.20	8.30	12.8	56.5	58.1
Manganese	12.8	23.7	23.7	32.5	60.5
Mercury	12.8	17.0	17.1	18.1	19.9
Nickel	6.60	9.50	9.80	12.5	22.5
Potassium	616	646	677	1,060	1,130
Silver	29.5	30.8	31.5	45.4	50.9
Sodium	1,170	1,540	1,580	2,380	3,140
Zinc	3.8	5.1	5.3	5.7	6.3

7.1.2 Normality of the Metals Data

Detected metals data were also analyzed using normal-quantile plots and the Shapiro-Wilk W test. Normal-quantile plots and the Shapiro-Wilk W test show that the distribution of iron is not normal and is right-skewed. The natural logarithm transformation was able to produce iron data that are sufficiently normal in distribution for the *t*-test. Although aluminum and potassium pass the test, the *p*-values are small enough that transformations were attempted to obtain data that are more comfortably normal in distribution. The natural logarithm transformation was effective for all three of these analytes. The results for the Shapiro-Wilk W test can be seen in Table 6.

Table 6. Results of the Shapiro-Wilk W test for metals constituents.

Analyte	Coefficient	p-value	Are the Data Normal?
Aluminum	0.7993	0.0799	Yes
Aluminum (ln[x] transformation)	0.9133	0.4875	Yes
Cadmium	0.9671	0.8561	Yes
Calcium	0.8965	0.3911	Yes
Chromium	0.8975	0.3963	Yes
Copper	0.9223	0.5448	Yes
Iron	0.7466	0.0277	No
Iron (ln[x] transformation)	0.8116	0.1004	Yes
Manganese	0.8737	0.2818	Yes
Mercury	0.9111	0.4744	Yes
Nickel	0.8467	0.1844	Yes
Potassium	0.7929	0.0709	Yes
Potassium (ln[x] transformation)	0.8031	0.0858	Yes
Silver	0.8143	0.1054	Yes
Sodium	0.9096	0.4651	Yes
Zinc	0.9508	0.7429	Yes

7.1.3 Implementation of the Statistical Test

Results from the previous sections indicate that the *t*-test is appropriate for use on the metals data. Table 7 lists the UCLs and ALs for each of the metals detected in tank residuals.

Table 7. Summary of post-decontamination concentrations of metal constituents detected in the rinsate of Tank WM-186.

Constituent	Mean Concentration	95% UCL	Units	Critical <i>t</i> -value	Action Level	Action Level Exceeded?
Aluminum	435	671	µg/L	2.132	3,100,000	No
Aluminum (ln[x] transformation)	5.96	6.45	µg/L	2.132	14.95	No
Cadmium	4.3	5.9	µg/L	2.132	610	No
Calcium	175	257	µg/L	2.132	NA	NA
Chromium	9.82	14.4	µg/L	2.132	900	No
Copper	2.2	2.8	µg/L	2.132	600,000	No
Iron	28.6	53.7	µg/L	2.132	1,700,000	No
Iron (ln[x] transformation)	2.95	3.93	µg/L	2.132	14.35	No
Manganese	30.6	47.9	µg/L	2.132	490,000	No
Mercury	17.0	19.5	µg/L	2.132	160	No
Nickel	12.2	18.0	µg/L	2.132	440,000	No
Potassium	826	1,060	µg/L	2.132	NA	NA
Potassium (ln[x] transformation)	6.68	6.96	µg/L	2.132	NA	NA
Silver	37.6	47.0	µg/L	2.132	3,000	No
Sodium	1,960	2,720	µg/L	2.132	NA	NA
Zinc	5.2	6.1	µg/L	2.132	1,700,000	No

It can be seen from the results in Table 7 that none of the metals have exceeded their specified ALs. Therefore, decontamination of Tank WM-186 has been successful with respect to metal constituents of concern.

7.2 Data Assessment for Anions

This section provides all of the preliminary data results, normality verification, and test results for anions detected in the tank residuals. Data generated from these analyses were validated in accordance with technical procedures. Based on acceptable laboratory performance on associated quality control analyses, no data validation flags were assigned (Portage Environmental, Inc. 2004b). Table 8 presents a list of anions that were detected in the tank residuals.

Table 8. Anions detected in the Tank WM-186 liquid residuals.

Detected Anions		
Chloride	Nitrate	Sulfate
Fluoride ^a	Phosphate	

a. Analyte was detected in three of the five samples; therefore, insufficient data exist to perform statistical analysis of the data set for this analyte and only preliminary data analysis is presented.

7.2.1 Preliminary Data Analysis for Anions

Table 9 presents the measures of central tendency and spread for anions. Table 10 provides the five-number summary for each of the detected anions. Boxplots and normal-quantile plots for anion data are shown in Appendix B. Laboratory results and associated validation flags for anions data presented in this DQA are listed in Appendix G.

Preliminary analysis of the anion data shows that all of the anions appear to be sufficiently symmetric in distribution. The symmetry of this data with respect to meeting test assumptions will be further addressed in the following section.

Table 9. Measures of central tendency and spread for anions detected in the Tank WM-186 liquid residuals.

Analyte	Units	Mean	Median	Standard Deviation	Coefficient of Variation (%)	Interquartile Range	Range
Chloride	mg/L	0.13	0.14	0.019	14.55	0.020	0.050
Fluoride	mg/L	0.20	0.24	0.16	81.65	0.26	0.36
Nitrate	mg-N/L	3.57	2.94	1.38	38.66	1.58	3.41
Phosphate	mg-P/L	0.16	0.19	0.056	34.39	0.080	0.13
Sulfate	mg/L	0.68	0.64	0.14	21.10	0.050	0.39

Table 10. Five-number summary for anions detected in the Tank WM-186 liquid residuals.

Analyte	Units	Minimum Value	First Quartile	Median	Third Quartile	Maximum Value
Chloride	mg/L	0.11	0.12	0.14	0.14	0.16
Fluoride	mg/L	0.031 ^a	0.031 ^a	0.24	0.29	0.39
Nitrate	mg-N/L	2.13	2.82	2.94	4.40	5.54
Phosphate	mg-P/L	0.10	0.11	0.19	0.19	0.23
Sulfate	mg/L	0.53	0.64	0.64	0.69	0.92

a. Analyte was reported as undetected. Value shown is the reported quantitation limit.

7.2.2 Normality of the Anions Data

Detected anions were analyzed using normal-quantile plots and the Shapiro-Wilk W test. Table 11 contains the results of the Shapiro-Wilk W test for the anions data. The Shapiro-Wilk W test indicates that the data are sufficiently normal in distribution for use of the *t*-test. All of the anions have a *p*-value that is considerably greater than 0.05. It can be concluded that the *t*-test is appropriate for use with untransformed anions data.

Table 11. Results of the Shapiro-Wilk W test for anions.

Analyte	Test Statistic	<i>p</i> -value	Are the Data Normal?
Chloride	0.9530	0.7583	Yes
Nitrate	0.9221	0.5438	Yes
Phosphate	0.8785	0.3027	Yes
Sulfate	0.8832	0.3242	Yes

7.2.3 Implementation of the Statistical Test

Results from the previous sections indicate that the *t*-test is appropriate for use on the anions data. Table 12 lists the UCLs and ALs for each of the anions detected in tank residuals.

Table 12. Summary of post-decontamination concentrations of anion constituents detected in the rinsate of Tank WM-186.

Constituent	Mean Concentration	95% UCL	Units	Critical <i>t</i> -value	Action Level	Action Level Exceeded?
Chloride	0.13	0.15	mg/L	2.132	NA	NA
Nitrate	3.57	4.88	mg-N/L	2.132	NA	NA
Phosphate	0.16	0.22	mg-P/L	2.132	NA	NA
Sulfate	0.68	0.82	mg/L	2.132	NA	NA

NA = Not applicable. Analyte is not a constituent of concern and does not have an action level.

From the results presented in Table 12, it can be concluded that decontamination efforts with respect to anions in Tank WM-186 have been successful.

7.3 Data Assessment of Organics

Samples collected from Tank WM-186 were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and polychlorinated biphenyls (PCBs). Data generated from these analyses were validated in accordance with technical procedures, and the data validation flags assigned to results were based on laboratory performance on associated quality control analyses. During the validation of the VOC data, benzene in one sample was flagged "U" (undetected) because of comparable levels measured in the field blank. The data usability was not negatively impacted (Environmental Validation & Assessment Consultants 2004a). In the semivolatile and PCB analyses, minor quality control issues were identified with the initial calibration of four SVOC compounds and one PCB. Data usability was not compromised because none of the compounds were detected in any of the samples (Environmental Validation & Assessment Consultants 2004b, 2004c).

Most of the organic constituents of concern were not detected in the post-decontamination tank contents. Pyridine and tributyl phosphate were the only two organic compounds detected in the tank residuals. Tributyl phosphate, which is not a constituent of concern in the Closure Plan (DOE-ID, 2004), was the only compound detected in a sufficient number of samples to perform meaningful statistical analysis. Because pyridine was only detected in one sample, insufficient data exist to perform formal statistical analysis of the data set for this analyte. The reported value for pyridine (1.7 µg/L) is well below the associated AL of 4,300 µg/L and will not be addressed further in this document. Boxplots and normal-quantile plots for organic data are shown in Appendix C. Laboratory results and associated validation flags for organics data presented in this DQA are listed in Appendix H.

7.3.1 Preliminary Data Analysis for Organic Constituents

The measures of central tendency and spread and the five-number summary for tributyl phosphate are presented in Tables 13 and 14, respectively. The distribution appears to be fairly symmetrical with no outliers. The distributional assumption will be further investigated in the following section.

Table 13. Measures of central tendency and spread for organic compounds detected in the Tank WM-186 liquid residuals.

Analyte	Mean (µg/L)	Median (µg/L)	Standard Deviation (µg/L)	Coefficient of Variation (%)	Interquartile Range (µg/L)	Range (µg/L)
Tributyl phosphate	14.6	14.2	1.02	7.01	1.30	2.50

Table 14. Five-number summary for organic compounds detected in the Tank WM-186 liquid residuals.

Analyte	Minimum Value (µg/L)	First Quartile (µg/L)	Median (µg/L)	Third Quartile (µg/L)	Maximum Value (µg/L)
Tributyl phosphate	13.3	14.1	14.2	15.4	15.8

7.3.2 Normality of Organic Data

A normal-quantile plot was constructed for tributyl phosphate. The plot indicates that the data follow a normal distribution and the normality assumption required for use of the *t*-test was met for this compound. Table 15 lists the results for the Shapiro-Wilk W test.

Table 15. Results of the Shapiro-Wilk W test for organic constituents.

Analyte	Test Statistic	p-value	Are the Data Normal?
Tributyl phosphate	0.9353	0.6329	Yes

7.3.3 Implementation of the Statistical Test

Results from the previous sections indicate that the *t*-test is appropriate for use on the organic data. Table 16 lists the UCL and AL for each of the organics detected in tank residuals.

Table 16. Summary of post-decontamination concentrations for organic compounds detected in the rinsate of Tank WM-186.

Constituent	Mean Concentration	95% UCL	Units	Critical <i>t</i> -value	Action Level	Action Level Exceeded?
Tributyl phosphate	14.6	15.5	µg/L	2.132	NA	NA

NA = Not applicable. Analyte is not a constituent of concern and does not have an action level.

It can be seen from the test results that none of the organics constituents has exceeded the associated AL. Only one compound was detected but has no associated AL. Therefore, decontamination goals with respect to organic constituents of concern have been achieved.

7.4 Data Assessment for pH

The pH of the samples collected from the Tank WM-186 post-decontamination residuals was also measured. The data for pH were validated according to technical procedures, and no issues with any applicable quality control criteria were identified (Portage Environmental, Inc. 2004b). This section contains the preliminary data analysis, test assumption verification, and the implementation of the statistical test for pH.

7.4.1 Preliminary Data Analysis

Tables 17 and 18 list the summary statistics calculated for pH. The associated boxplot and normal-quantile plot can be found in Appendix D. Laboratory results and associated validation flags for pH data presented in this DQA are listed in Appendix G.

Table 17. Measures of central tendency and spread for pH detected in the Tank WM-186 liquid residuals.

Analyte	Mean	Median	Standard Deviation	Coefficient of Variation (%)	Interquartile Range	Range
pH	3.8	3.9	0.09	2.3	0.10	0.20

Table 18. Five-number summary for pH detected in the Tank WM-186 liquid residuals.

Analyte	Minimum Value	First Quartile	Median	Third Quartile	Maximum Value
pH	3.7	3.8	3.9	3.9	3.9

The preliminary data analysis indicates that the pH data are left-skewed in distribution. This is due to the fact that the three upper values of pH are the same number. The effect of this asymmetry will be discussed further in Section 7.4.2.

7.4.2 Normality of the pH Data

Normality was also assessed for the pH data. The normal-quantile plot showed that the data are not normal in distribution. The Shapiro-Wilk W test results are included in Table 19. These results show that pH has not passed the Shapiro-Wilk W test. Attempts at finding a transformation failed because the three largest values are identical. However, the data are left-skewed, which will make a comparison of an LCL to an AL a conservative comparison. Since the contents of the tank are acidic in nature, the comparison of the LCL to the lower action limit is the comparison of primary concern. Therefore, it is appropriate to use the *t*-test to compare the LCL of pH with its lower AL.

Table 19. Results of the Shapiro-Wilk W test for pH.

Analyte	Test Statistic	p-value	Are the Data Normal?
pH	0.7709	0.0460	No

7.4.3 Implementation of the Statistical Test

Results from the previous sections indicate that the *t*-test is appropriate for use on the pH data. Table 20 lists the LCL, UCL, and the ALs for pH detected in tank residuals

Table 20. Summary of post-decontamination pH in the rinsate of Tank WM-186.

Constituent	Mean Concentration	95% LCL	95% UCL	Critical <i>t</i> -value	Lower Action Level	Upper Action Level	Action Level Exceeded?
pH	3.8	3.7	4.0	2.776	2.0	12.5	No

It can be seen from Table 21 that the ALs have not been exceeded. Therefore, decontamination goals with respect to pH have been met for Tank WM-186.

7.5 Data Assessment for Radionuclides

Radionuclide data from the Tank WM-186 were validated according to technical procedures to identify issues with any applicable quality control criteria (Portage Environmental, Inc. 2004c, 2004d, 2004e, 2004f). No significant issues that would negatively impact the data usability were identified

Total strontium analysis was determined as ^{90}Sr . All isotopes of strontium other than ^{90}Sr are short-lived and would not be present in the tank residuals. Therefore, total Sr and ^{90}Sr are used interchangeably throughout this document. The data for ^{99}Tc were generated by inductively coupled plasma-mass spectrometry (ICP-MS). Table 21 lists radionuclides that were detected in the tank residuals.

Table 21. Radionuclides detected in the Tank WM-186 liquid residuals.

Detected Radionuclides		
²⁴¹ Am	³ H	^{239/240} Pu
¹²⁵ Sb	¹²⁹ I	²⁴¹ Pu
⁶⁰ Co	⁹⁴ Nb	⁹⁹ Tc
¹³⁴ Cs	⁶³ Ni	Total Sr
¹³⁷ Cs	²³⁷ Np	⁹⁵ Zr
¹⁵⁴ Eu	²³⁸ Pu	

7.5.1 Preliminary Data Analysis of Radionuclides

Summary statistics were generated for the radionuclide data. Table 22 lists the statistical summary of central tendency and spread for detected radionuclides, and Table 23 provides the five-number summary for each of the detected radionuclides. In cases when a radionuclide was not detected in all five samples, one-half of the corresponding minimum detectable activity was used in the calculations (EPA 2000a). Laboratory results and associated validation flags for radionuclides data presented in this DQA are listed in Appendix I. Plots used in the preliminary data analysis and for test assumption verification are found in Appendix E.

Table 22. Measures of central tendency and spread for radionuclides detected in the Tank WM-186 liquid residuals.

Analyte	Mean (pCi/L)	Median (pCi/L)	Standard Deviation (pCi/L)	Coefficient of Variation (%)	Interquartile Range (pCi/L)	Range (pCi/L)
²⁴¹ Am ^a	7.08E+02	8.13E+02	4.62E+02	6.53E+01	4.38E+02	1.22E+03
¹²⁵ Sb	9.53E+03	6.86E+03	5.05E+03	5.30E+01	7.22E+03	1.16E+04
⁶⁰ Co	3.23E+03	3.07E+03	9.50E+02	2.94E+01	1.50E+02	2.59E+03
¹³⁴ Cs	2.07E+03	2.20E+03	4.77E+02	2.30E+01	5.20E+02	1.15E+03
¹³⁷ Cs	2.82E+06	3.11E+06	6.73E+05	2.39E+01	5.10E+05	1.67E+06
¹⁵⁴ Eu	6.59E+03	5.37E+03	4.92E+03	7.46E+01	8.15E+03	1.11E+04
³ H	1.94E+03	1.86E+03	3.71E+02	1.91E+01	8.00E+01	1.02E+03
¹²⁹ I	2.28E+01	2.72E+01	6.35E+00	2.78E+01	9.80E+00	1.32E+01
⁹⁴ Nb	2.68E+03	3.09E+02	3.32E+03	1.24E+02	5.24E+03	6.73E+03
⁶³ Ni	4.70E+03	4.04E+03	1.47E+03	3.13E+01	7.00E+02	3.57E+03
²³⁷ Np ^a	3.95E+01	3.01E+01	2.86E+01	7.25E+01	2.12E+01	7.66E+01
²³⁸ Pu	2.59E+04	9.93E+03	3.82E+04	1.47E+02	3.36E+03	8.99E+04
^{239/240} Pu	3.82E+03	1.26E+03	5.81E+03	1.52E+02	6.50E+02	1.34E+04
²⁴¹ Pu	2.80E+04	8.82E+03	2.84E+04	1.021E+02	4.90E+04	5.59E+04
⁹⁹ Tc	8.87E+02	6.07E+02	4.85E+02	5.46E+01	6.65E+02	1.11E+03
Total Sr	1.44E+06	1.13E+06	8.12E+05	5.62E+01	4.10E+05	2.14E+06

a. Analyte contains at least one observation that was below the detection limit. This value was substituted with 0.5*MDA for all statistics calculated for this analyte.

Table 23. Five-number summary for radionuclides detected in the Tank WM-186 liquid residuals.

Analyte	Minimum Value (pCi/L)	First Quartile (pCi/L)	Median (pCi/L)	Third Quartile (pCi/L)	Maximum Value (pCi/L)
²⁴¹ Am	6.00E+01 ^a	4.75E+02	8.13E+02	9.13E+02	1.28E+03
¹²⁵ Sb	4.63E+03	6.38E+03	6.86E+03	1.36E+04	1.62E+04
⁶⁰ Co	2.20E+03	2.96E+03	3.07E+03	3.11E+03	4.79E+03
¹³⁴ Cs	1.31E+03	1.93E+03	2.20E+03	2.45E+03	2.46E+03
¹³⁷ Cs	1.70E+06	2.71E+06	3.11E+06	3.22E+06	3.37E+06
¹⁵⁴ Eu	1.51E+03	2.65E+03	5.37E+03	1.08E+04	1.26E+04
³ H	1.52E+03	1.86E+03	1.86E+03	1.94E+03	2.54E+03
¹²⁹ I	1.44E+01	1.76E+01	2.72E+01	2.74E+01	2.76E+01
⁹⁴ Nb	2.67E+02	2.98E+02	3.09E+02	5.54E+03	7.00E+03
⁶³ Ni	3.70E+03	3.90E+03	4.04E+03	4.60E+03	7.27E+03
²³⁷ Np	4.90E+00 ^a	2.98E+01	3.01E+01	5.10E+01	8.15E+01
²³⁸ Pu	4.11E+03	9.14E+03	9.93E+03	1.25E+04	9.40E+04
^{239/240} Pu	7.67E+02	1.11E+03	1.26E+03	1.76E+03	1.42E+04
²⁴¹ Pu	6.44E+03	6.69E+03	8.82E+03	5.57E+04	6.23E+04
⁹⁹ Tc	4.42E+02	5.85E+02	6.07E+02	1.25E+03	1.55E+03
Total Sr	6.40E+05	1.13E+06	1.13E+06	1.54E+06	2.78E+06

a. When the analyte reported as undetected, half the minimum detectable activity was used.

It can be seen from the above tables and their associated plots that ¹³⁴Cs, ¹³⁷Cs, and ¹²⁹I appear to be left-skewed. ⁹⁴Nb, ⁶³Ni, ²³⁸Pu, ^{239/240}Pu, ²⁴¹Pu all appear to be right-skewed. Further investigation of the distribution of the radionuclides will take place in the following section.

7.5.2 Normality of the Radionuclide Data

Detected radionuclide data were also analyzed using normal-quantile plots and the Shapiro-Wilk W test. Normal-quantile plots showed that ¹³⁴Cs, ¹³⁷Cs, and ¹²⁹I appear to be left-skewed. ⁶³Ni, ²³⁸Pu, ^{239/240}Pu, and ²⁴¹Pu all appear to be right-skewed. The Shapiro-Wilk W test indicates that ¹²⁹I, ⁹⁴Nb, ⁶³Ni, ²³⁸Pu, and ^{239/240}Pu are non-normal in distribution. ²⁴¹Pu has a *p*-value that is close enough to 0.05 that a transformation will be sought to obtain data that are more comfortably normal in distribution. Successful transformations were found for ²⁴¹Pu and the radionuclides that did not pass the test, with the exceptions of ¹²⁹I and ⁹⁴Nb. Bootstrapping was done on ¹²⁹I and ⁹⁴Nb to determine how the deviations from normality affected the distribution of the sample mean. A histogram and a normal-quantile plot for the bootstrapping results can be found in Appendix E. Bootstrapping results show that the sample mean for these two radionuclides is not sufficiently normal in distribution. However, because the distribution of ⁹⁴Nb is right-skewed, the results of the *t*-test will be conservative. The distribution of ¹²⁹I is left-skewed, but the observed values are much less than the inventory level so the inability to accurately use the *t*-test should not affect the ability to confidently declare that ¹²⁹I levels are below the inventory level. The Shapiro-Wilk W test was done on the untransformed and the transformed data. Table 24 contains the results of the Shapiro-Wilk W test for the radionuclides. The results of the Shapiro-Wilk W test, normal-quantile plots, and bootstrapping analysis indicate it is appropriate to use the *t*-test on the untransformed data and the transformations that are noted in the table.

Table 24. Results of the Shapiro-Wilk W test for radionuclides.

Analyte	Test Statistic	p-value	Are the Data Normal?
²⁴¹ Am	0.9763	0.9139	Yes
¹²⁵ Sb	0.8713	0.2717	Yes
⁶⁰ Co	0.8564	0.2155	Yes
¹³⁴ Cs	0.8696	0.2646	Yes
¹³⁷ Cs	0.8386	0.1610	Yes
¹⁵⁴ Eu	0.9021	0.4215	Yes
³ H	0.8853	0.3341	Yes
¹²⁹ I	0.7699	0.0450	No
⁹⁴ Nb	0.7495	0.0295	No
⁶³ Ni	0.7434	0.0258	No
⁶³ Ni (ln[x] transformation)	0.7952	0.0741	Yes
²³⁷ Np	0.9583	0.7959	Yes
²³⁸ Pu	0.6292	0.0015	No
²³⁸ Pu (ln[x] transformation)	0.8555	0.2125	Yes
^{239/240} Pu	0.6105	0.0009	No
^{239/240} Pu (ln[ln(x)] transformation)	0.8216	0.1201	Yes
²⁴¹ Pu	0.7894	0.0662	Yes
²⁴¹ Pu (ln[x] transformation)	0.9117	0.4781	Yes
⁹⁹ Tc	0.8568	0.2169	Yes
Total Sr	0.8774	0.2977	Yes

7.5.3 Implementation of the Statistical Test

No specific regulatory thresholds relative to the activity (i.e., concentrations) exist for the radionuclides left in any one tank after decontamination. Rather, the total inventory of radionuclides remaining in all closed components of the TFF will be evaluated following completion of the TFF decontamination efforts. The PA (DOE-ID 2003) conducted to address the DOE Order 435.1 (2001) closure requirements provides an estimate of acceptable radionuclide concentrations in the liquids remaining in each tank following decontamination. While these modeled levels are not the basis for a decision such as continuing to clean a tank, the modeled values required to meet DOE closure standards can be compared with the levels achieved through decontamination efforts. Because of this, hypothesis testing is not required to make decisions concerning whether decontamination of Tank WM-186 may cease; however, hypothesis testing using the modeled value provides information on the decontamination effort for the radionuclides.

Table 25 provides the UCLs for radionuclides and compares it with the PA modeled inventory (DOE-ID 2003). None of the analytes approaches the corresponding inventory level. All of the

Table 25. Summary of post-decontamination activities of radionuclides in the rinsate of Tank WM-186.

Constituent	Mean Concentration	95% UCL	Units	Critical <i>t</i> -value	Inventory Level	Inventory Level Exceeded?
²⁴¹ Am	7.08E+02	1.15E+03	pCi/L	2.132	3.60E+07	No
⁶⁰ Co	3.23E+03	4.13E+03	pCi/L	2.132	1.40E+07	No
¹²⁵ Sb	9.53E+03	1.44E+04	pCi/L	2.132	1.49E+06	No
¹³⁴ Cs	2.07E+03	2.52E+03	pCi/L	2.132	1.21E+06	No
¹³⁷ Cs	2.82E+06	3.46E+06	pCi/L	2.132	1.15E+11	No
¹⁵⁴ Eu	6.59E+03	1.13E+04	pCi/L	2.132	1.83E+08	No
³ H	1.94E+03	2.30E+03	pCi/L	2.132	1.61E+07	No
¹²⁹ I	2.28E+01	2.89E+01	pCi/L	2.132	7.44E+04	No
⁹⁴ Nb	2.68E+03	5.84E+03	pCi/L	2.132	3.44E+06	No
⁶³ Ni	4.70E+03	6.11E+03	pCi/L	2.132	8.70E+07	No
⁶³ Ni (ln[x] transformation)	8.42E+00	8.68E+00	pCi/L	2.132	1.83E+01	No
²³⁷ Np	3.95E+01	6.67E+01	pCi/L	2.132	3.43E+05	No
²³⁸ Pu	2.59E+04	6.23E+04	pCi/L	2.132	5.70E+08	No
²³⁸ Pu (ln[x] transformation)	9.51E+00	1.06E+01	pCi/L	2.132	2.02E+01	No
^{239/240} Pu	3.82E+03	9.36E+03	pCi/L	2.132	7.05E+07	No
^{239/240} Pu (ln[ln(x)] transformation)	2.02E+00	2.15E+00	pCi/L	2.132	2.89E+00	No
²⁴¹ Pu	2.80E+04	5.51E+04	pCi/L	2.132	4.24E+08	No
²⁴¹ Pu (ln[x] transformation)	9.40E+00	1.09E+01	pCi/L	2.132	1.99E+01	No
⁹⁹ Tc	8.87E+02	1.35E+03	pCi/L	2.132	2.99E+07	No
Total Sr	1.44E+06	2.22E+06	pCi/L	2.132	8.15E+10	No

radionuclides present in the rinsate were at an activity that was significantly less than the activity modeled in the PA (DOE-ID 2003). The data provide a high degree of confidence in deciding that the decontamination efforts were successful in reducing the activity of all other radionuclides to below those modeled in the PA (DOE-ID 2003).

It can be seen from the results in Table 25 that none of the inventory levels have been exceeded. Therefore, it can be concluded that remediation goals have been met with regards to the radionuclides in the Tank WM-186 residuals.

8. CONCLUSIONS

The data assessed in this report were generated from the sample analysis of residual tank liquids remaining after decontamination. Because decontamination activities reduced the volume of solids remaining in the tank to less than 15% by volume of the total sample collected, the solids portion of the samples collected were not analyzed. Data from the analysis of the liquid samples from the tank vault sumps or diversion valve boxes are not analyzed in this document but will be addressed in a subsequent report. The residual tank liquids data were assessed, and the statistical results presented in Section 7 demonstrate that all closure performance standards have been met. It can be concluded that decontamination efforts in Tank WM-186 have been successful.

9. REFERENCES

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Appendix A

Graphical Representation of Metals Data

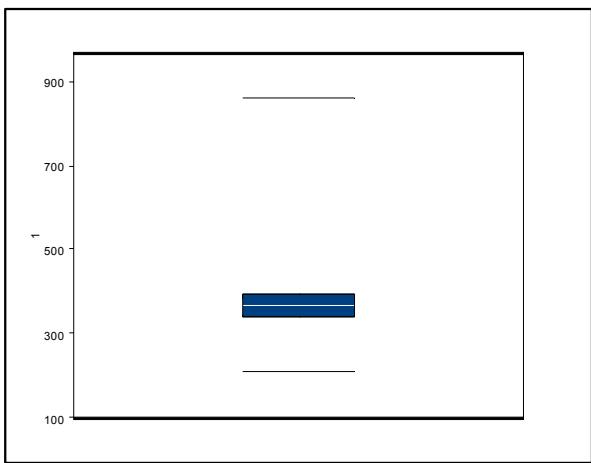


Figure A-1. Boxplot for aluminum data.

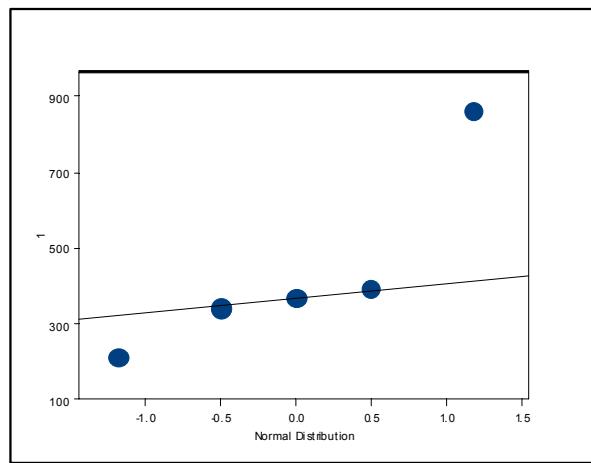


Figure A-2. Normal-quantile plot for aluminum data.

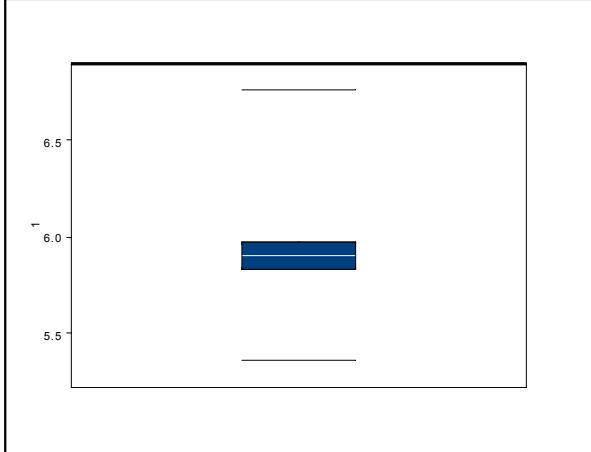


Figure A-3. Boxplot for aluminum ($\ln[x]$ transformation) data.

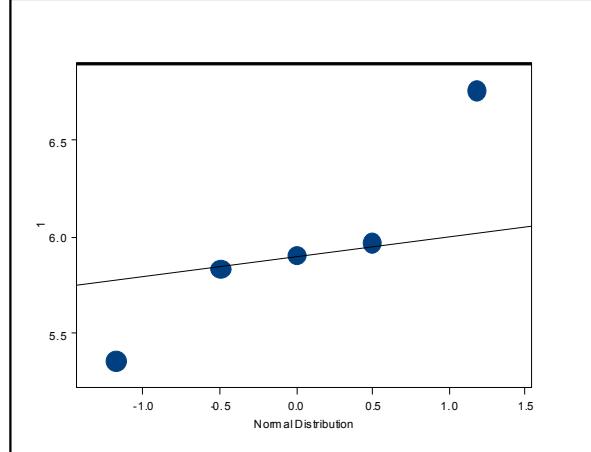


Figure A-4. Normal-quantile plot for aluminum ($\ln[x]$ transformation) data.

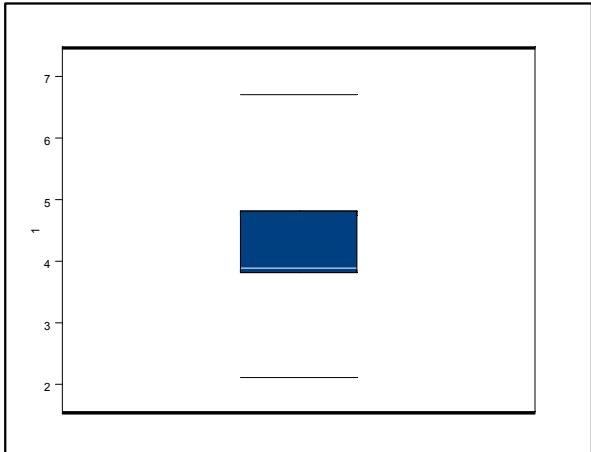


Figure A-5. Boxplot for cadmium data.

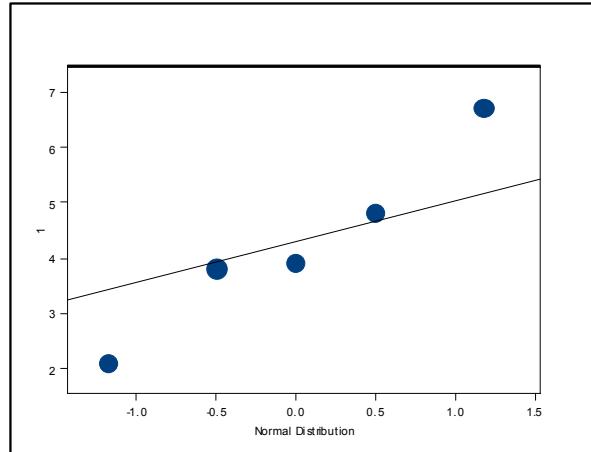


Figure A-6. Normal-quantile plot for cadmium data.

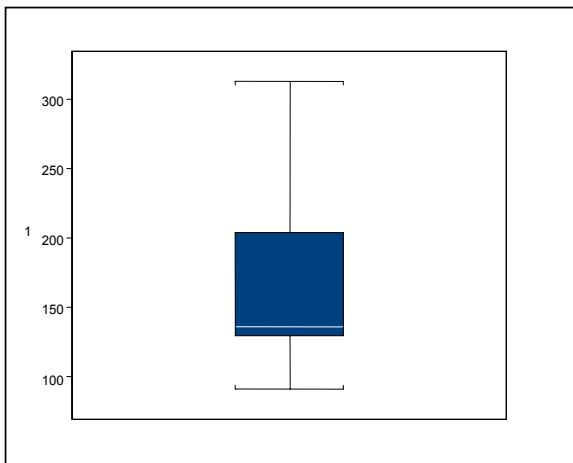


Figure A-7. Boxplot for calcium data

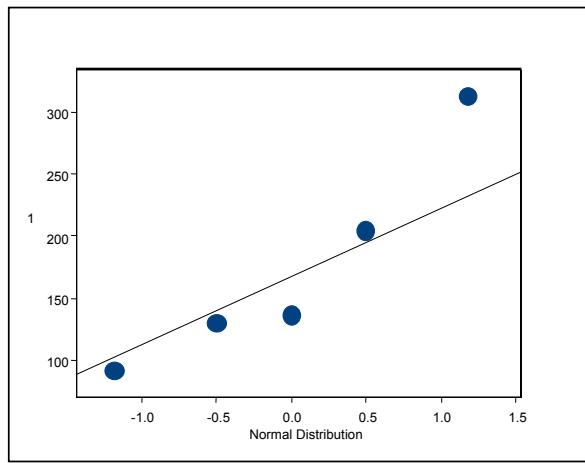


Figure A-8. Normal-quantile plot for calcium data.

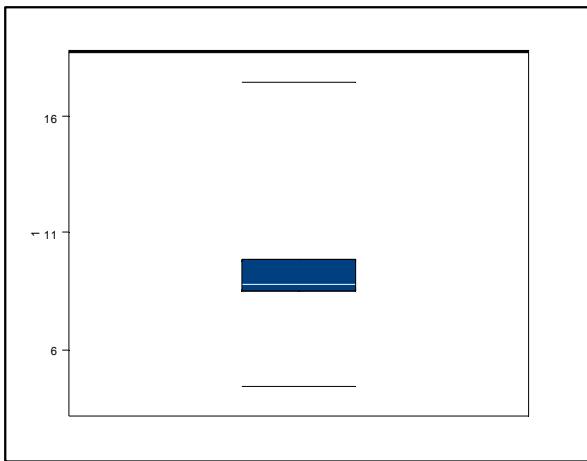


Figure A-9. Boxplot for chromium data.

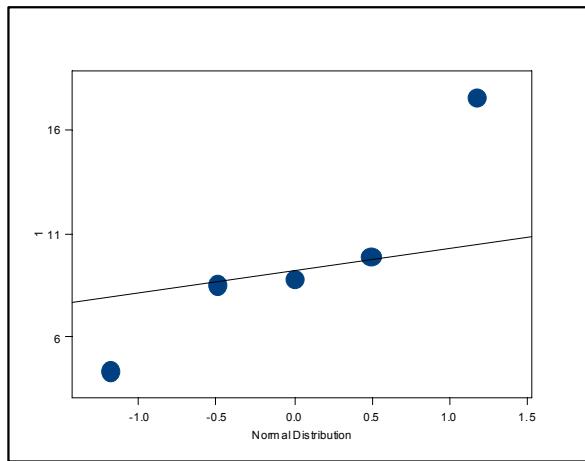


Figure A-10. Normal-quantile plot for chromium data.

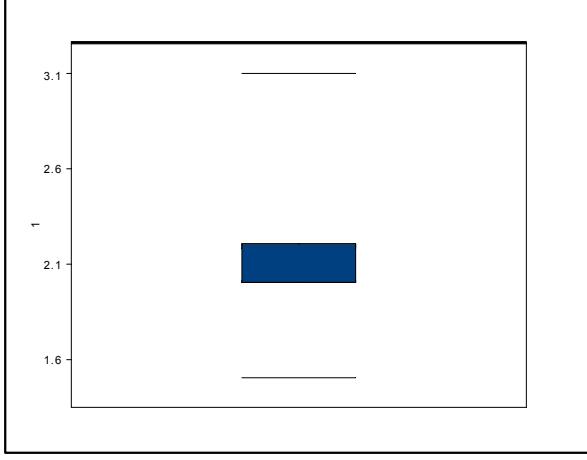


Figure A-11. Boxplot for copper data.

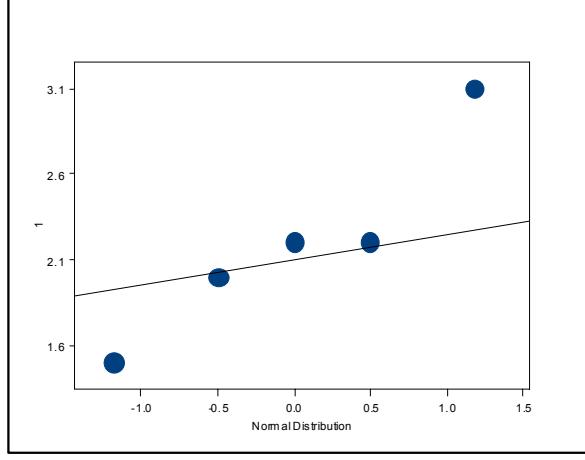


Figure A-12. Normal-quantile plot for copper data.

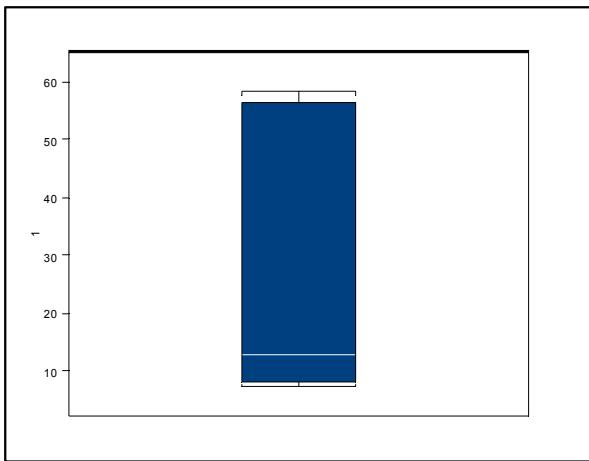


Figure A-13. Boxplot for iron data.

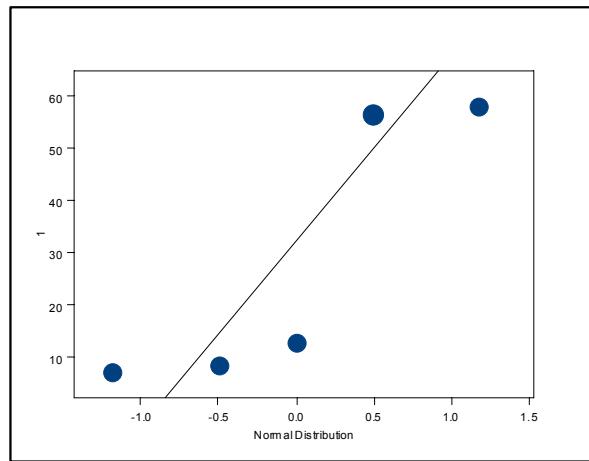


Figure A-14. Normal-quantile plot for iron data.

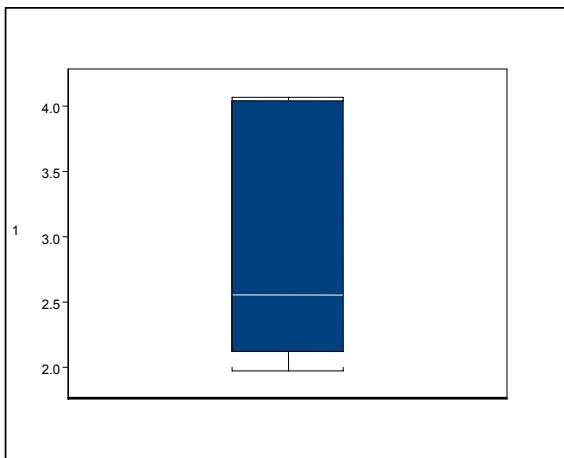


Figure A-15. Boxplot for iron data ($\ln[x]$ transformation).

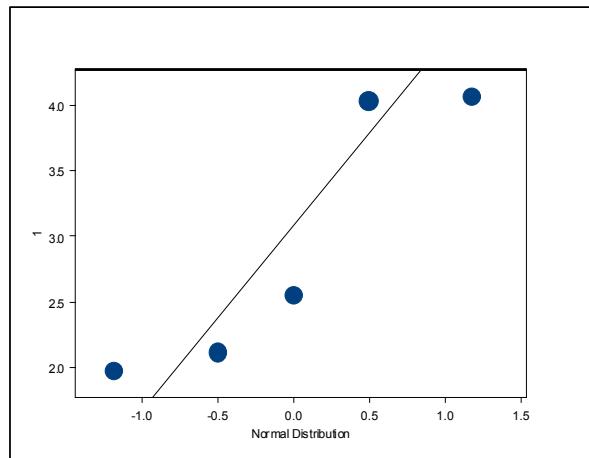


Figure A-16. Normal-quantile plot for iron data ($\ln[x]$ transformation).

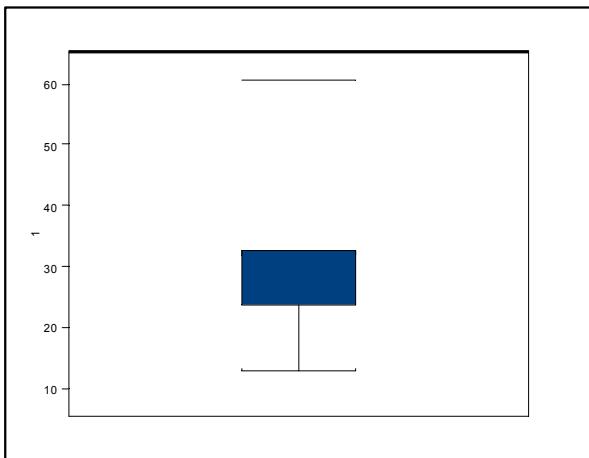


Figure A-17. Boxplot for manganese data.

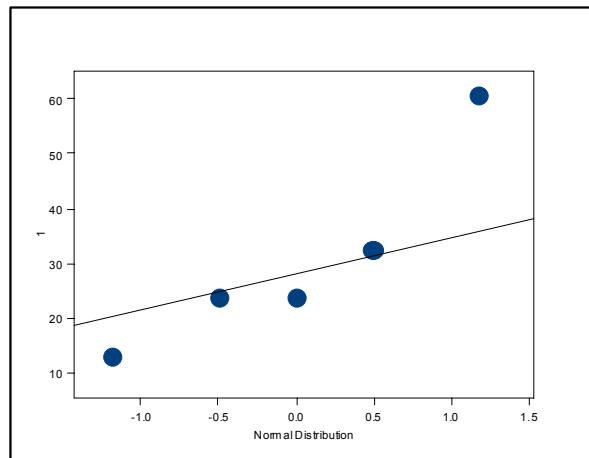


Figure A-18. Normal-quantile plot for manganese data.

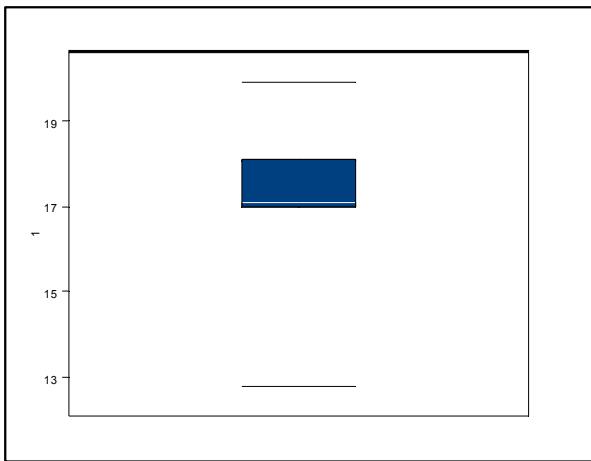


Figure A-19. Boxplot for mercury data.

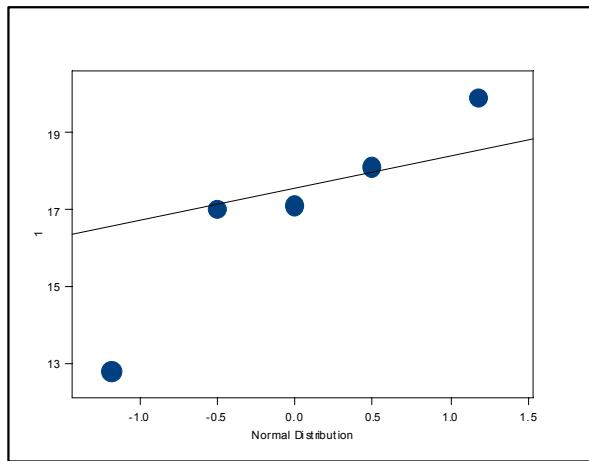


Figure A-20. Normal-quantile plot for mercury data.

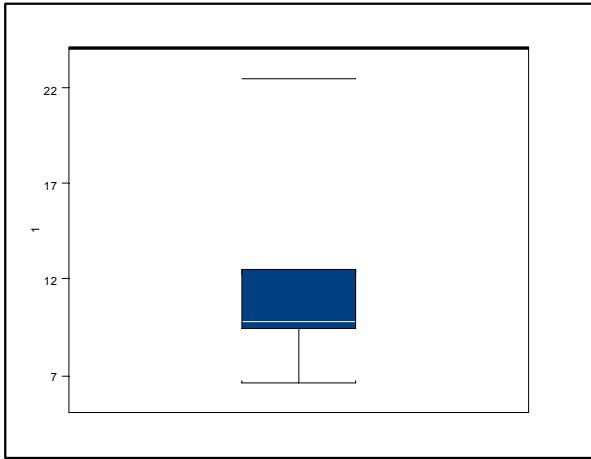


Figure A-21. Boxplot for nickel data.

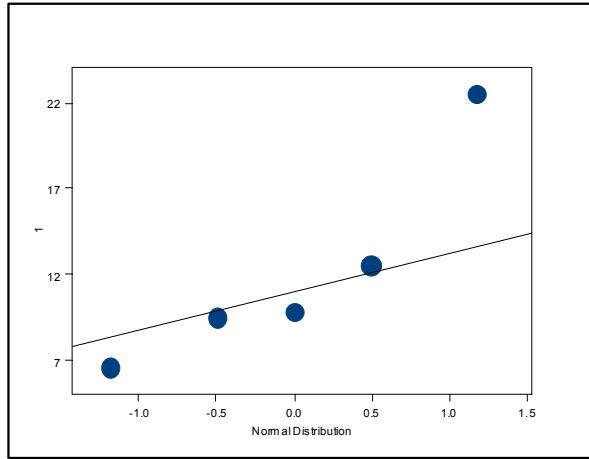


Figure A-22. Normal-quantile plot for nickel data.

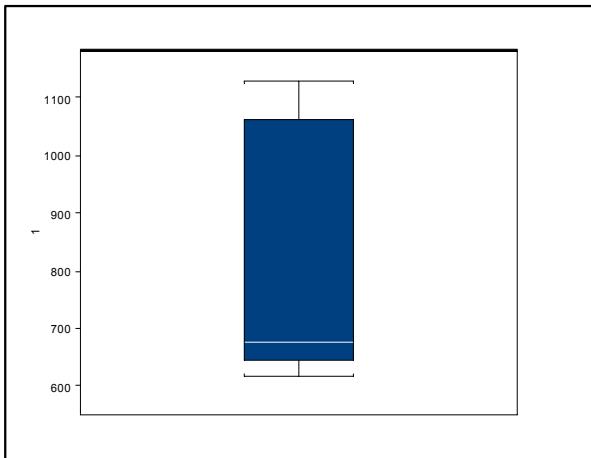


Figure A-23. Boxplot for potassium data.

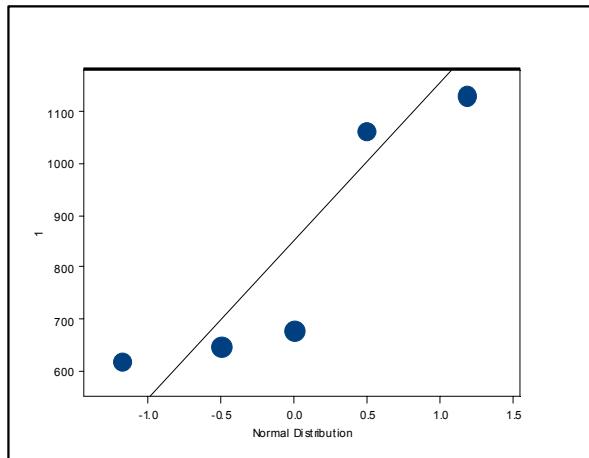


Figure A-24. Normal-quantile plot for potassium data.

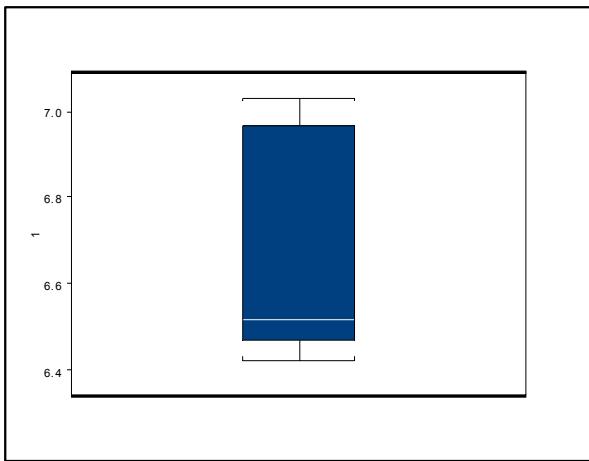


Figure A-25. Boxplot for potassium ($\ln[x]$ transformation) data.

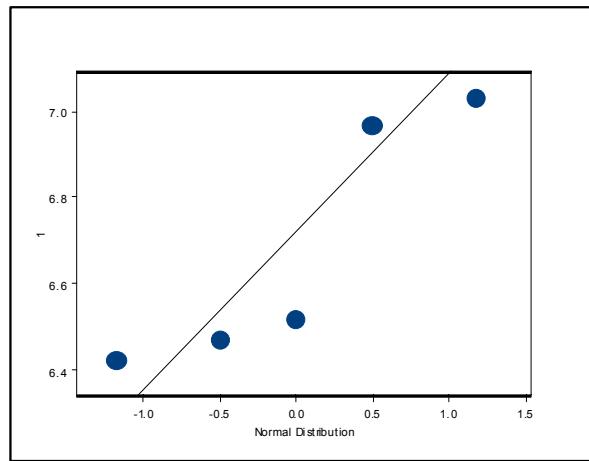


Figure A-26. Normal-quantile plot for potassium ($\ln[x]$ transformation) data.

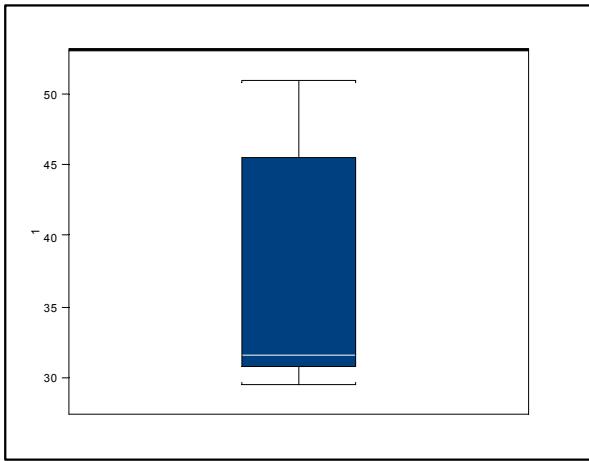


Figure A-27. Boxplot for silver data.

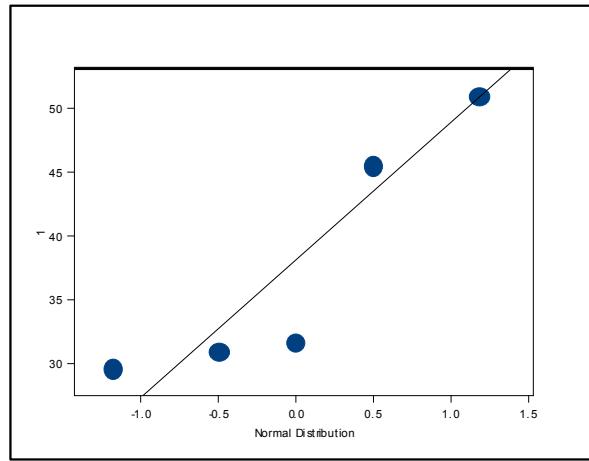


Figure A-28. Normal-quantile plot for silver data.

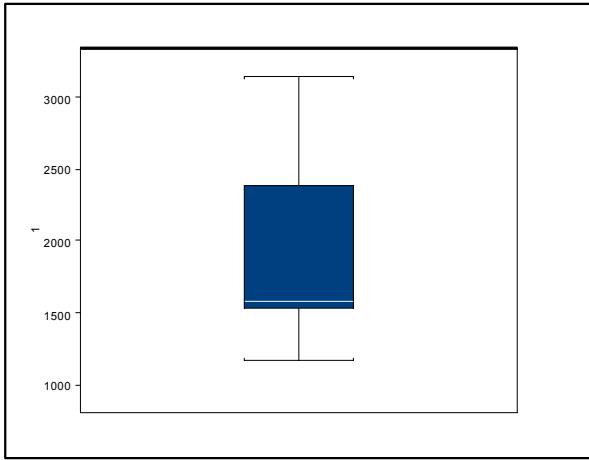


Figure A-29. Boxplot for sodium data.

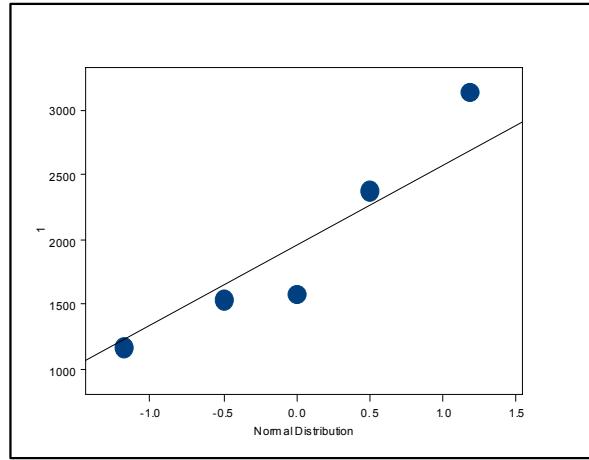


Figure A-30. Normal-quantile plot for sodium data.

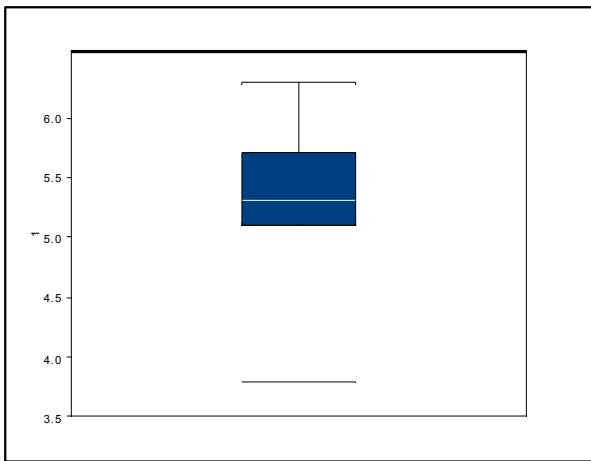


Figure A-31. Boxplot for zinc data.

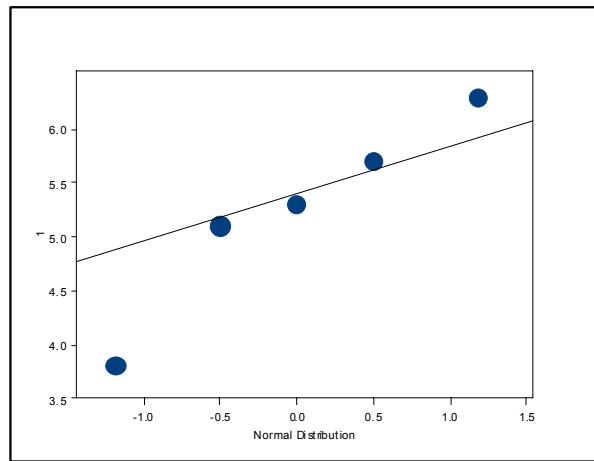
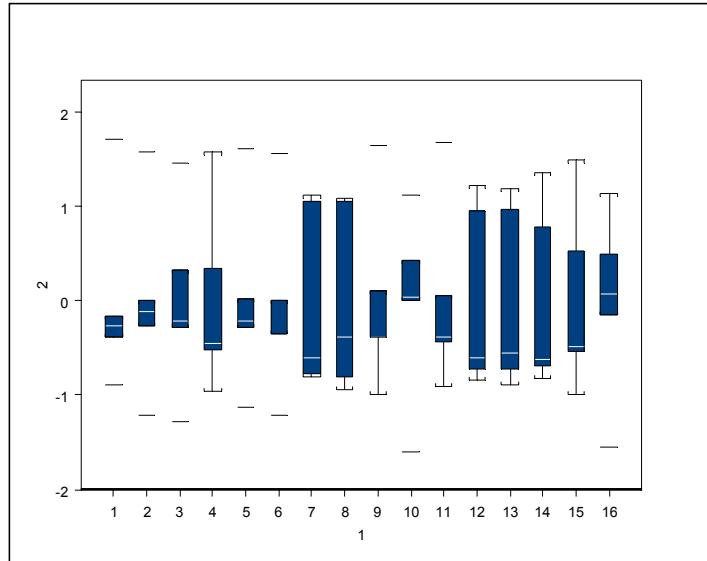


Figure A-32. Normal-quantile plot for zinc data.



Analyte	Number
Aluminum	1
Aluminum ($\ln[x]$ transformation)	2
Cadmium	3
Calcium	4
Chromium	5
Copper	6
Iron	7
Iron ($\ln[x]$ transformation)	8
Manganese	9
Mercury	10
Nickel	11
Potassium	12
Potassium ($\ln[x]$ transformation)	13
Silver	14
Sodium	15
Zinc	16

Figure A-33. Grouped boxplots of metals data. Data have been standardized so that distributions are directly comparable.

Appendix B

Graphical Representation of Anion Data

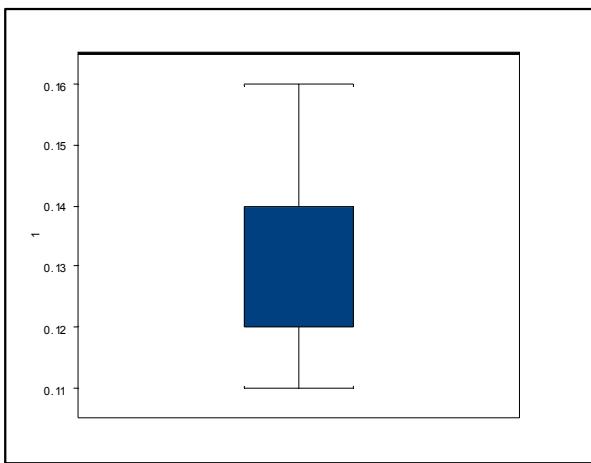


Figure B-1. Boxplot for chloride data.

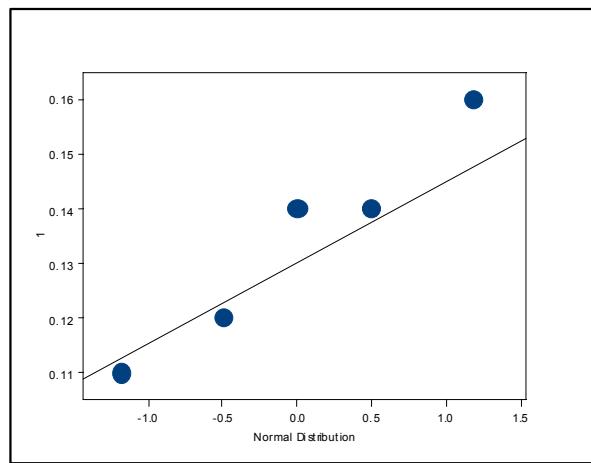


Figure B-2. Normal-quantile plot for chloride data.

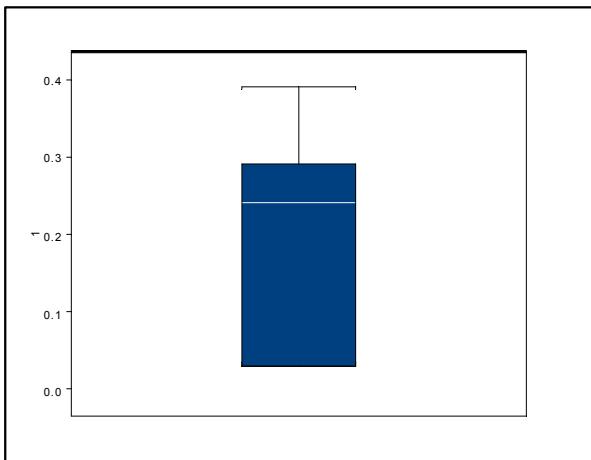


Figure B-3. Boxplot for fluoride data.

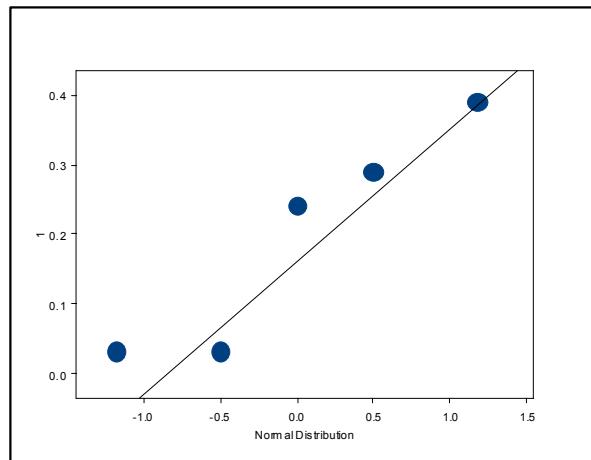


Figure B-4. Normal-quantile plot for fluoride data.

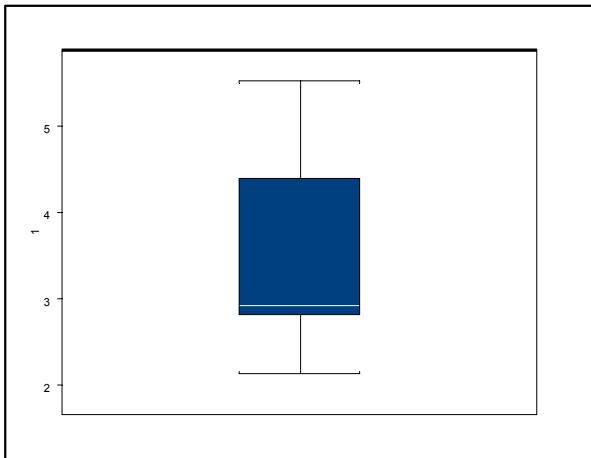


Figure B-5. Boxplot for nitrate data.

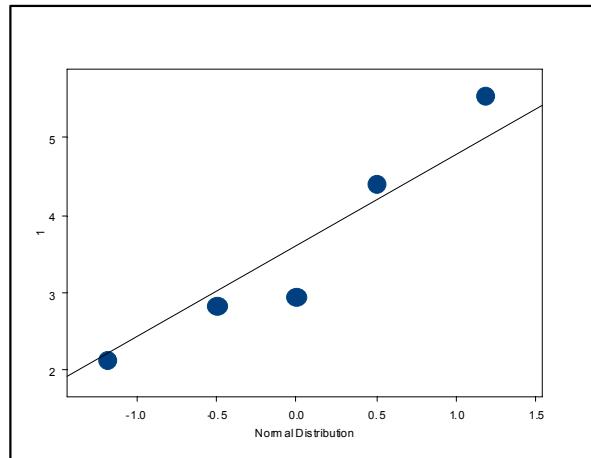


Figure B-6. Normal-quantile plot for nitrate data.

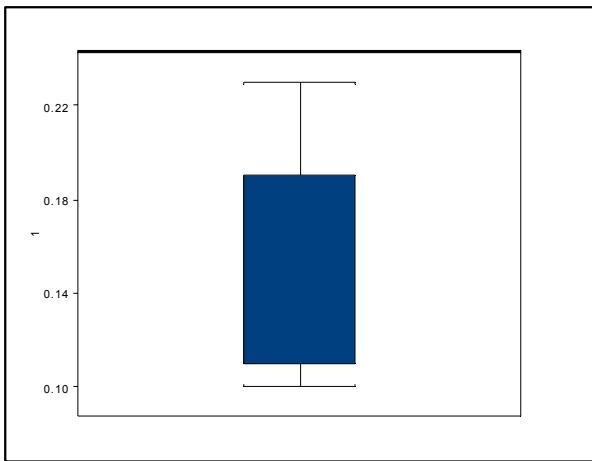


Figure B-7. Boxplot for phosphate data.

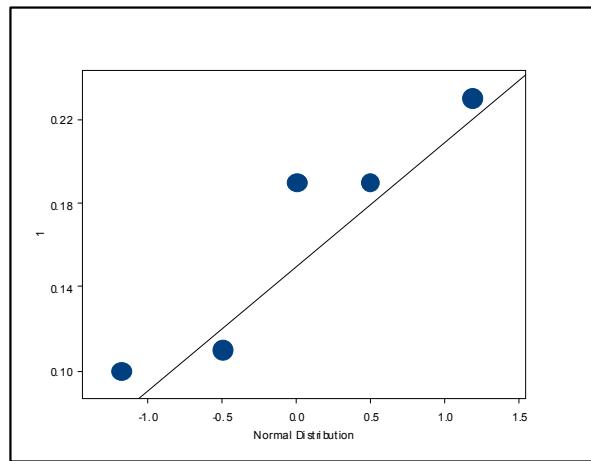


Figure B-8. Normal-quantile plot for phosphate data.

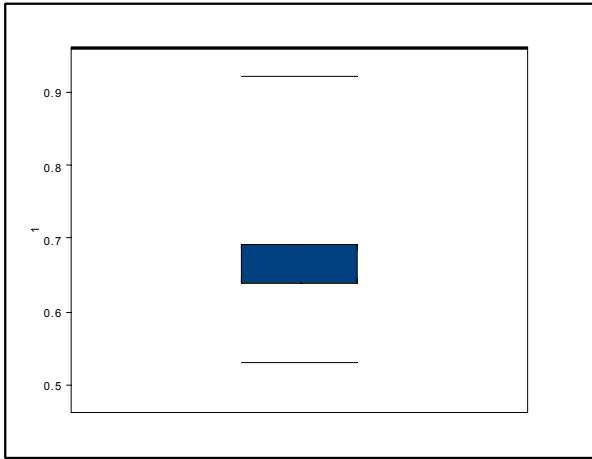


Figure B-9. Boxplot for sulfate data.

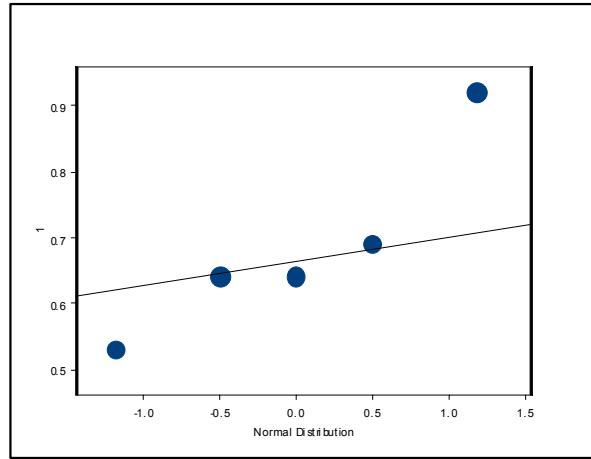
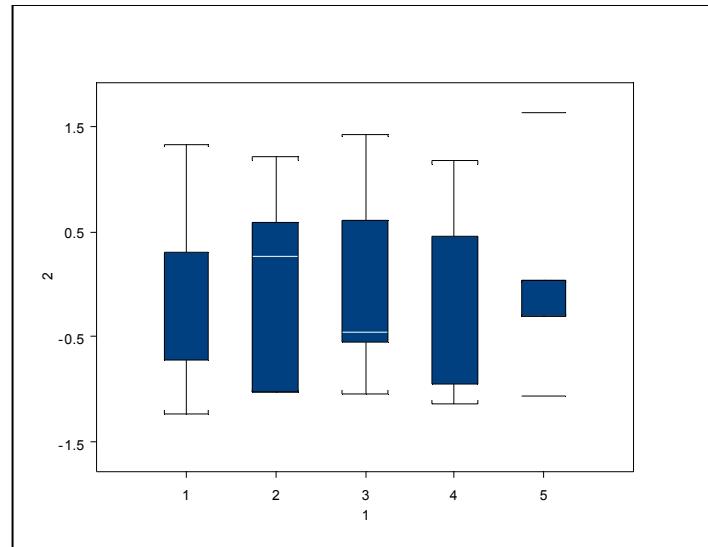


Figure B-10. Normal-quantile plot for sulfate data.



Analyte	Number
Chloride	1
Fluoride	2
Nitrate-N	3
Phosphate	4
Sulfate	5

Figure B-11. Grouped boxplots of anion data. Data have been standardized so that distributions are directly comparable.

Appendix C

Graphical Representation of Organics Data

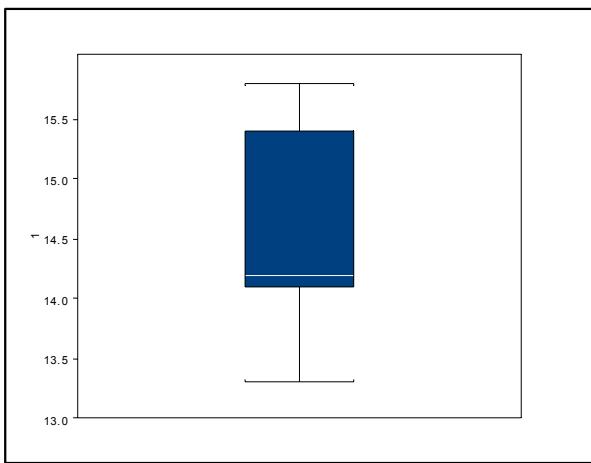


Figure C-1. Boxplot for tributyl phosphate data.

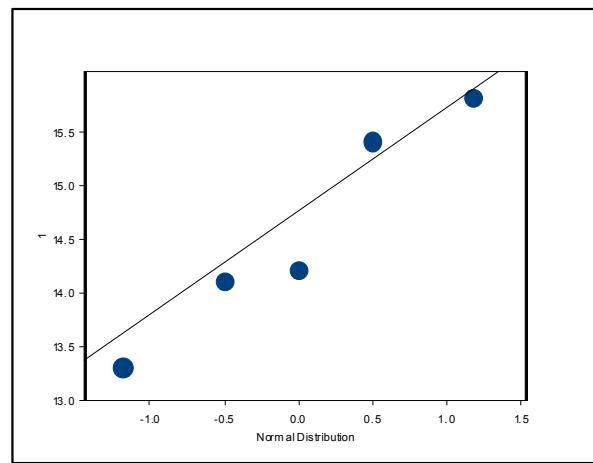


Figure C-2. Normal-quantile plot for tributyl phosphate data.

Appendix D

Graphical Representation of pH Data

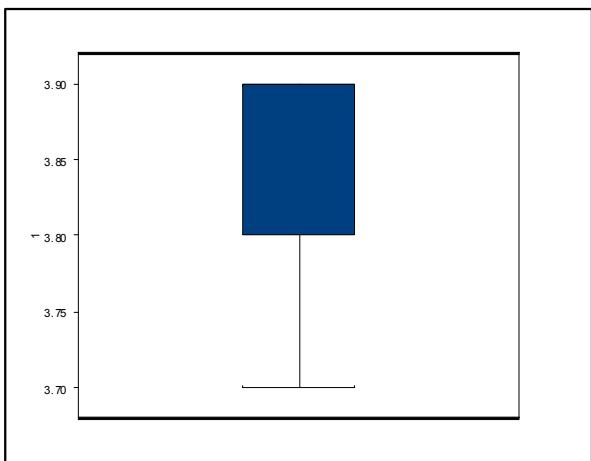


Figure D-1. Boxplot for pH data.

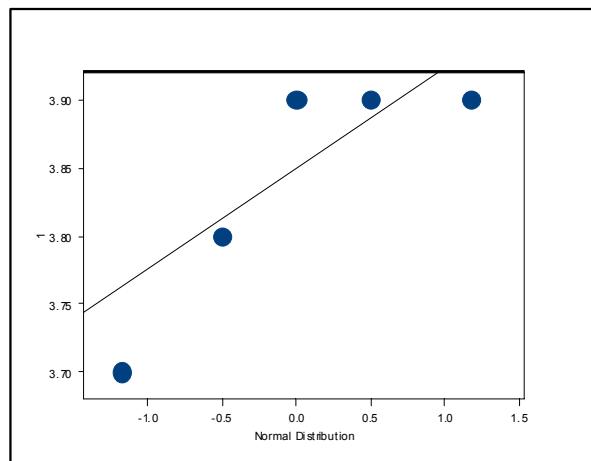


Figure D-2. Normal-quantile plot for pH data.

Appendix E

Graphical Representation of Radionuclide Data

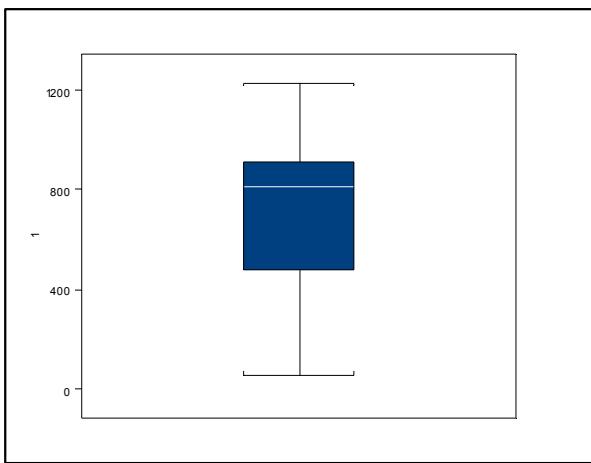


Figure E-1. Boxplot for ^{241}Am data.

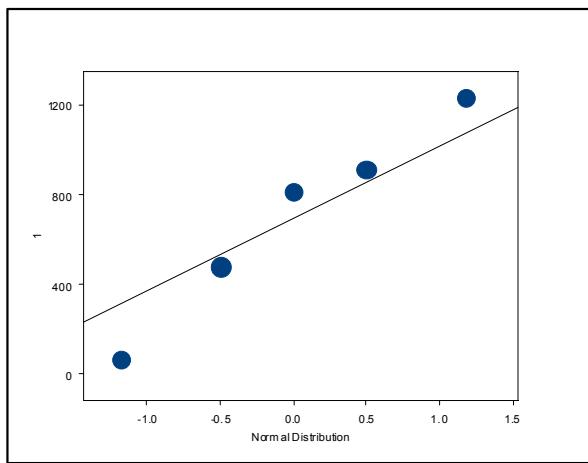


Figure E-2. Normal-quantile plot for ^{241}Am data.

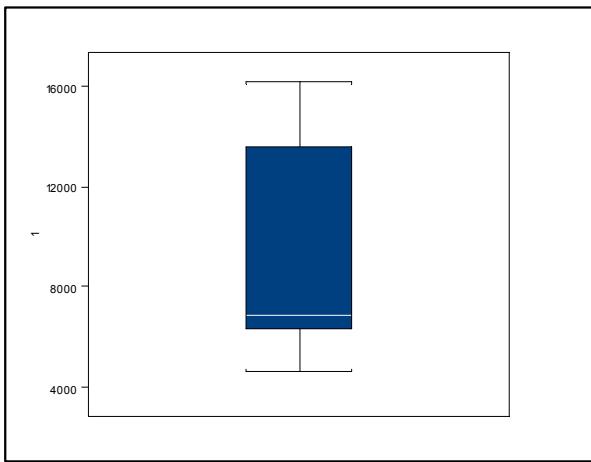


Figure E-3. Boxplot for ^{125}Sb data.

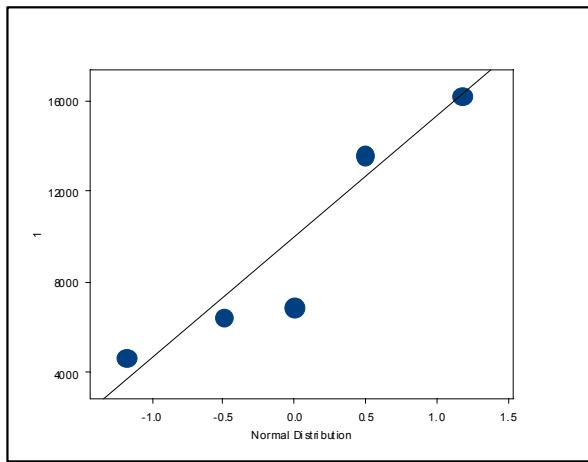


Figure E-4. Normal-quantile plot for ^{125}Sb data.

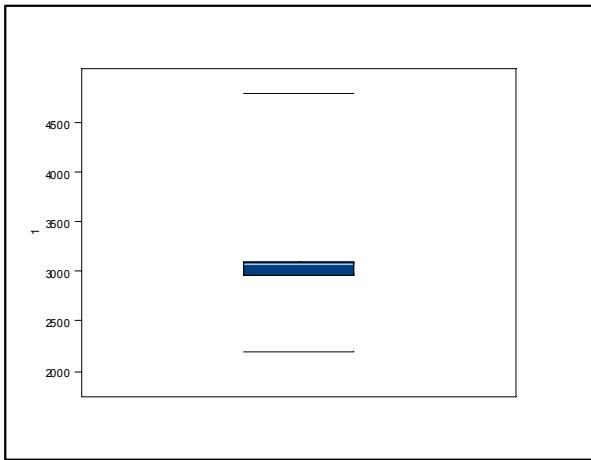


Figure E-5. Boxplot for ^{60}Co data.

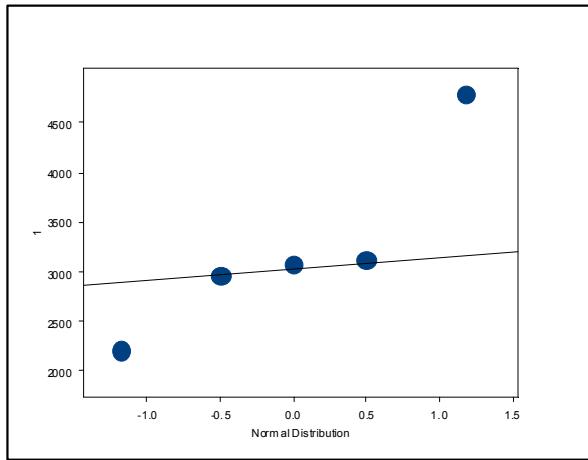


Figure E-6. Normal-quantile plot for ^{60}Co data.

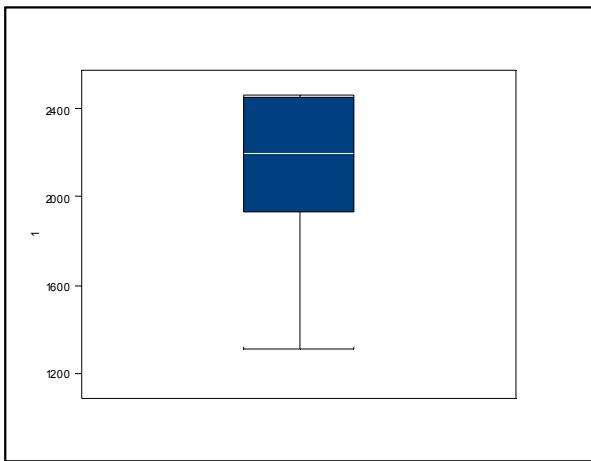


Figure E-7. Boxplot for ^{134}Cs data.

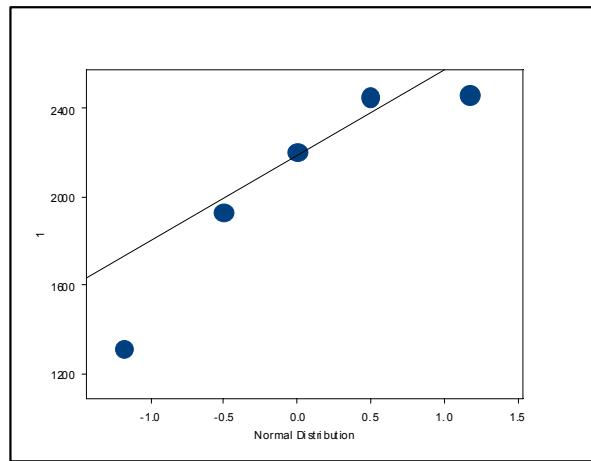


Figure E-8. Normal-quantile plot for ^{134}Cs data.

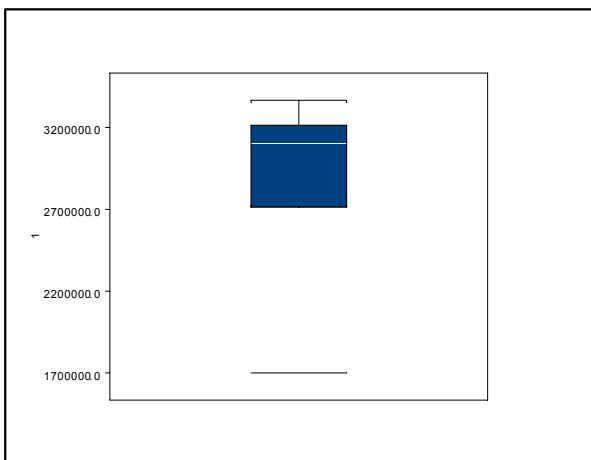


Figure E-9. Boxplot for ^{137}Cs data.

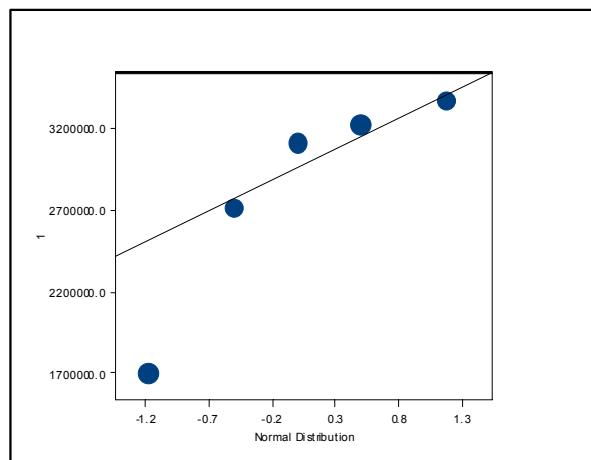


Figure E-10. Normal-quantile plot for ^{137}Cs data.

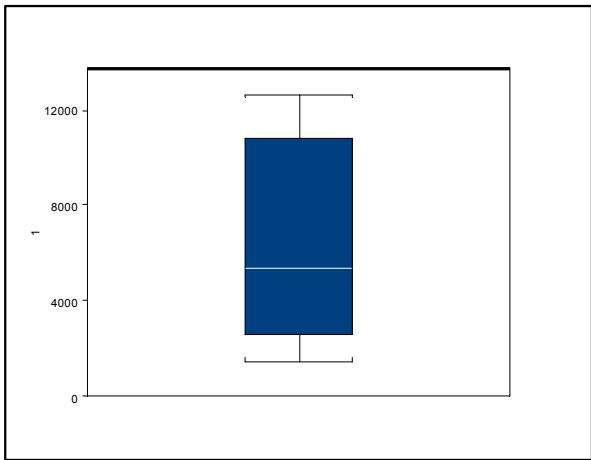


Figure E-11. Boxplot for ^{154}Eu data.

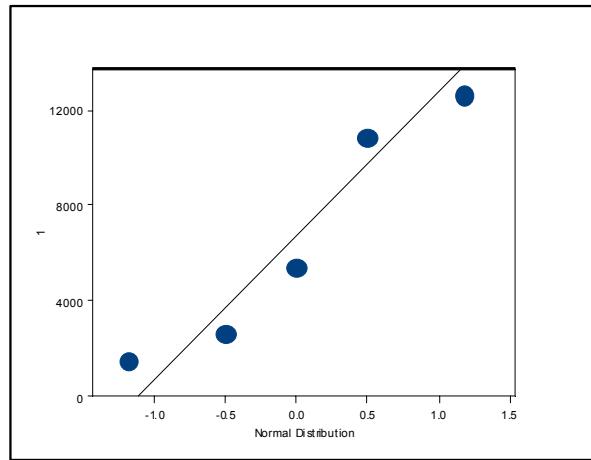


Figure E-12. Normal-quantile plot for ^{154}Eu data.

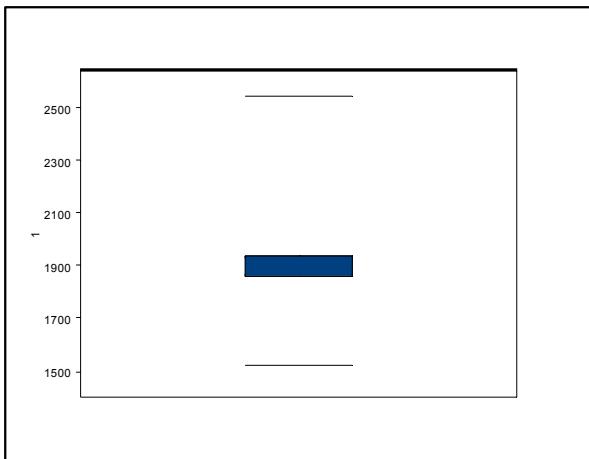


Figure E-13. Boxplot for ${}^3\text{H}$ data.

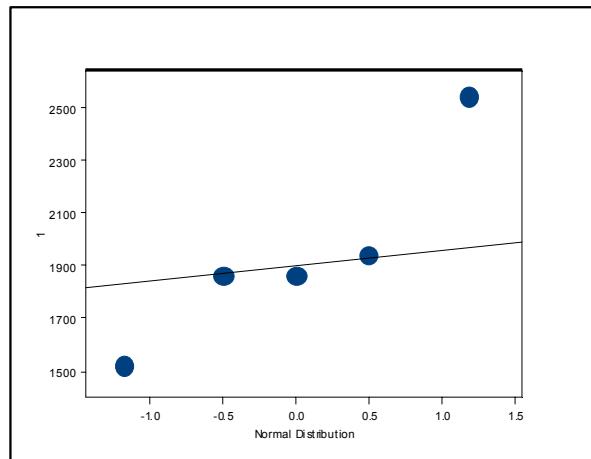


Figure E-14. Normal-quantile plot for ${}^3\text{H}$ data.

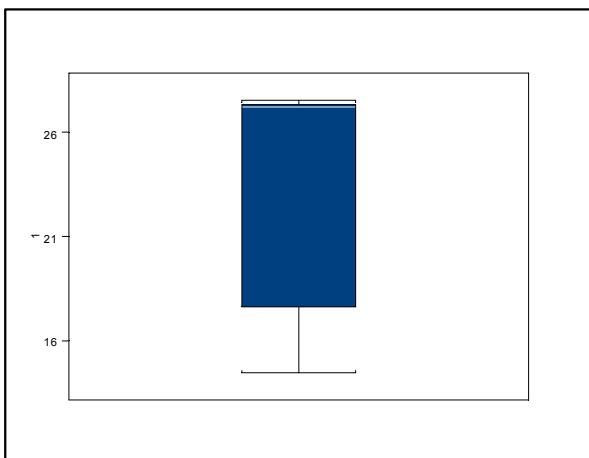


Figure E-15. Boxplot for ${}^{129}\text{I}$ data.

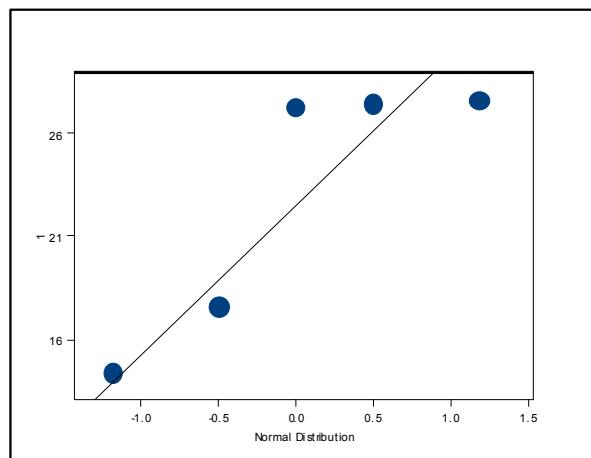


Figure E-16. Normal-quantile plot for ${}^{129}\text{I}$ data.

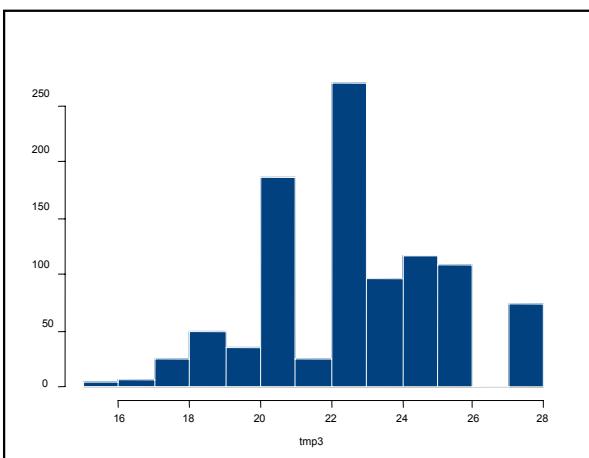


Figure E-17. Histogram of the sample mean distribution for ${}^{129}\text{I}$ estimated with bootstrapping.

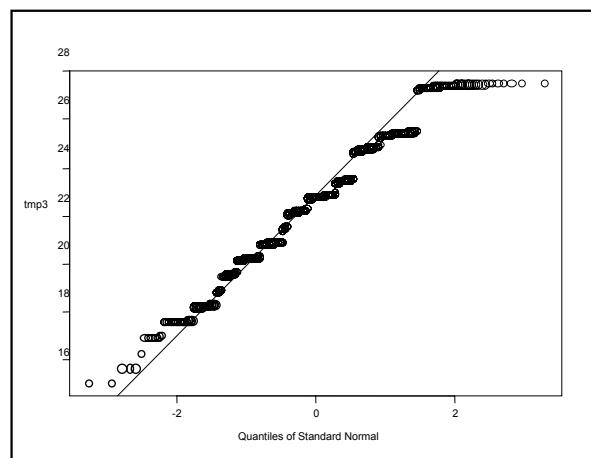


Figure E-18. Normal-quantile plot for the sample mean distribution for ${}^{129}\text{I}$ estimated with bootstrapping.

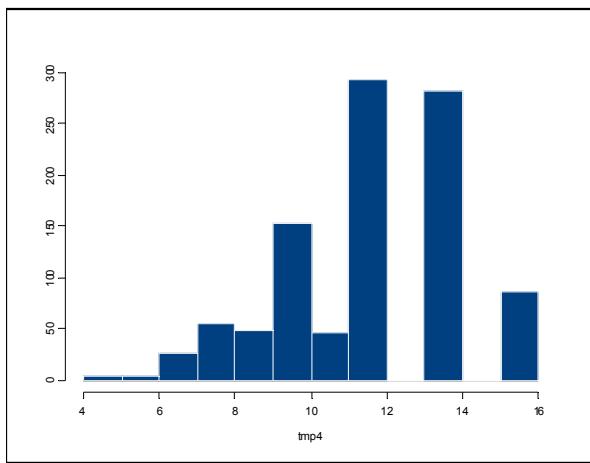


Figure E-19. Histogram of the sample mean distribution as estimated with bootstrapping for the ^{129}I transformed using the $e^{x/10}$ transformation.

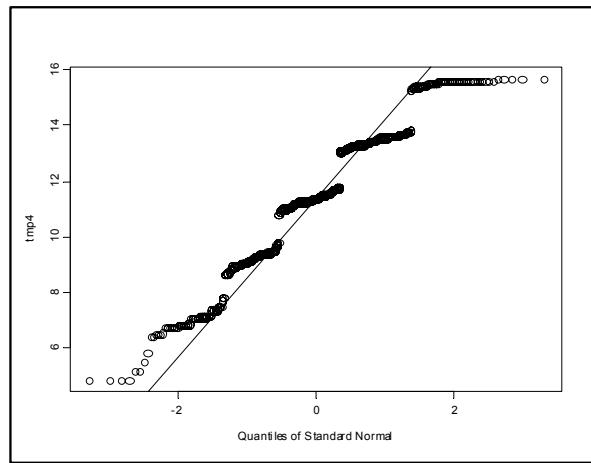


Figure E-20. Normal-quantile plot of the sample mean distribution as estimated with bootstrapping for the ^{129}I transformed using the $e^{x/10}$ transformation.

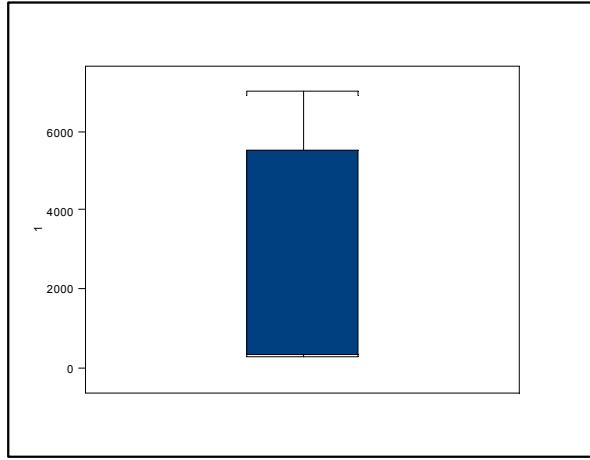


Figure E-21. Boxplot for ^{94}Nb data.

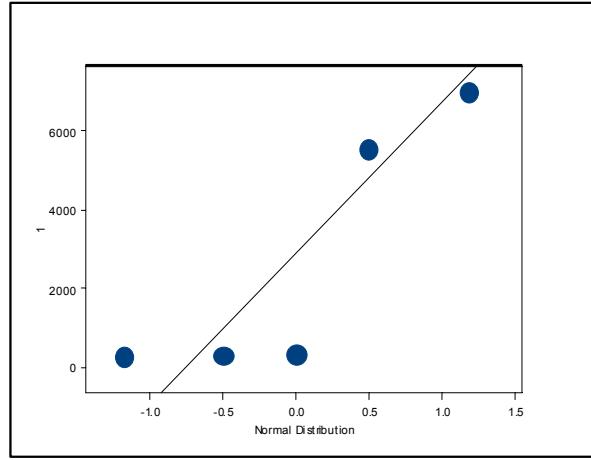


Figure E-22. Normal-quantile plot for ^{94}Nb data.

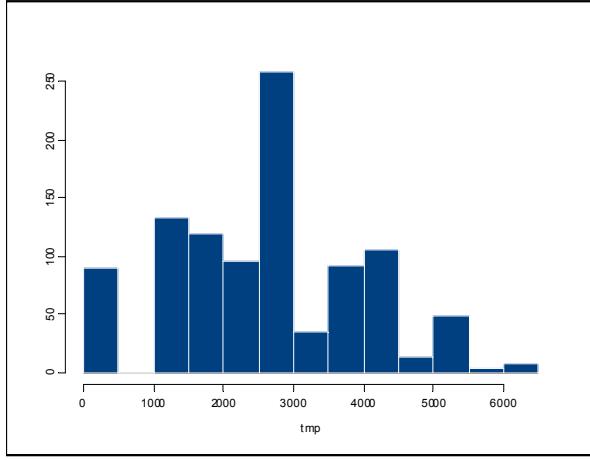


Figure E-23. Histogram of the sample mean distribution for ^{94}Nb estimated with bootstrapping.

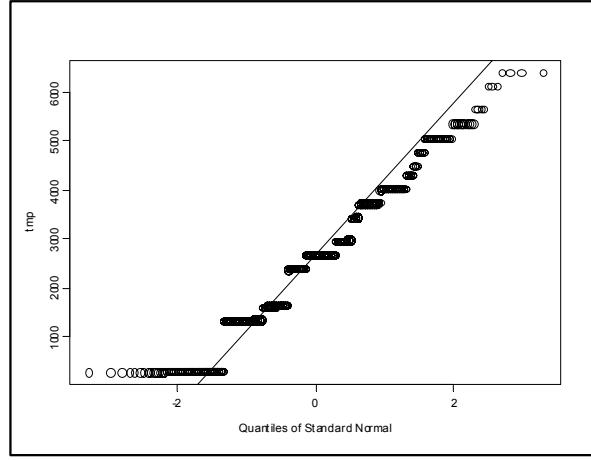


Figure E-24. Normal-quantile plot for the sample mean distribution for ^{94}Nb estimated with bootstrapping.

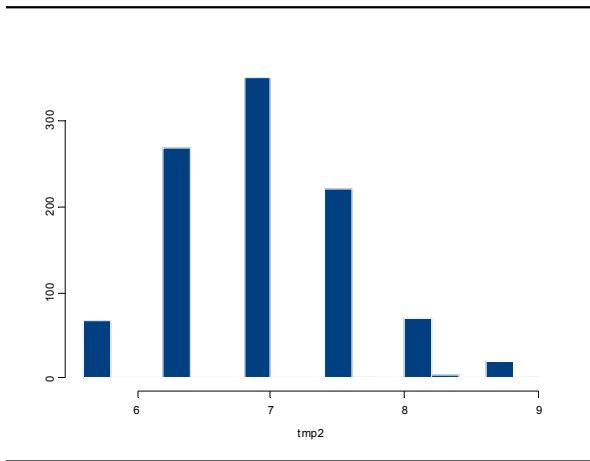


Figure E-25. Histogram of the sample mean distribution for the natural logarithm transformation for ^{94}Nb estimated with bootstrapping.

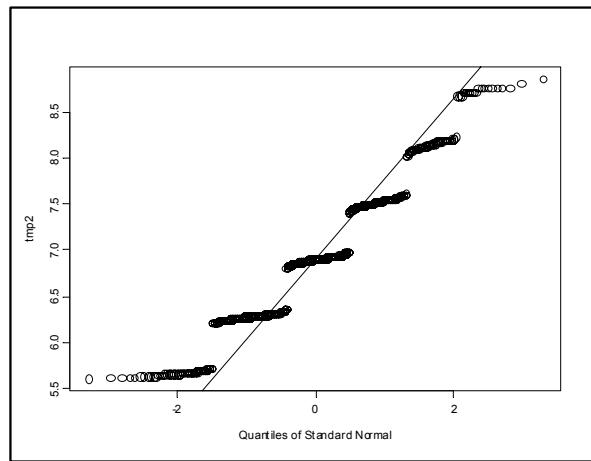


Figure E-26. Normal-quantile plot of the sample mean distribution for the natural logarithm transformation for ^{94}Nb estimated with bootstrapping.

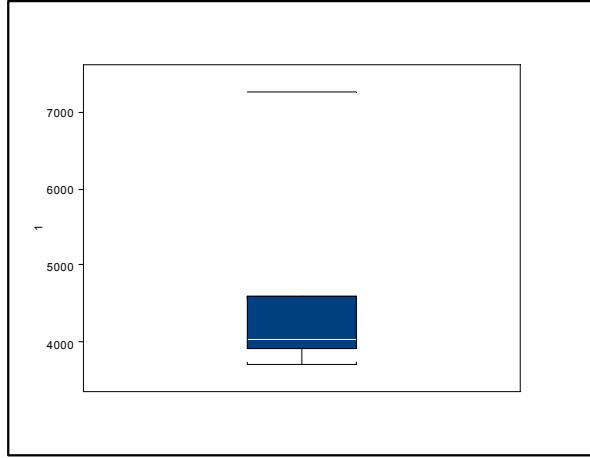


Figure E-27. Boxplot for ^{63}Ni data.

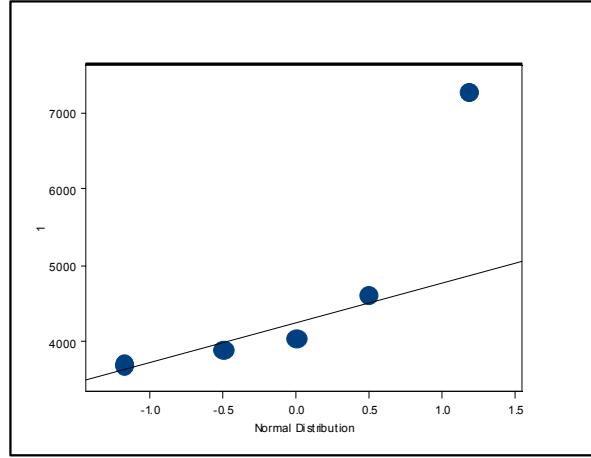


Figure E-28. Normal-quantile plot for ^{63}Ni data.

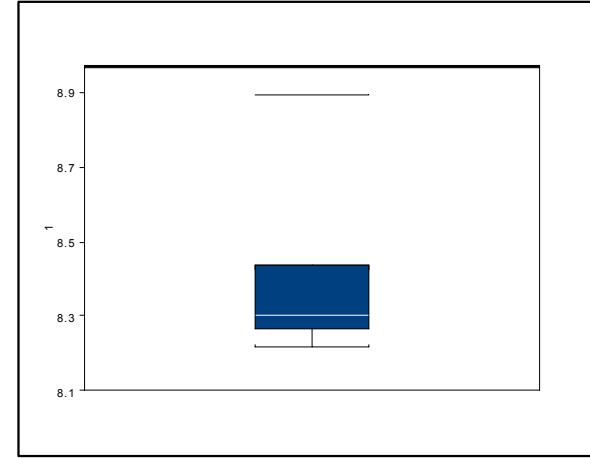


Figure E-29. Boxplot for ^{63}Ni ($\ln[\text{x}]$ transformation) data.

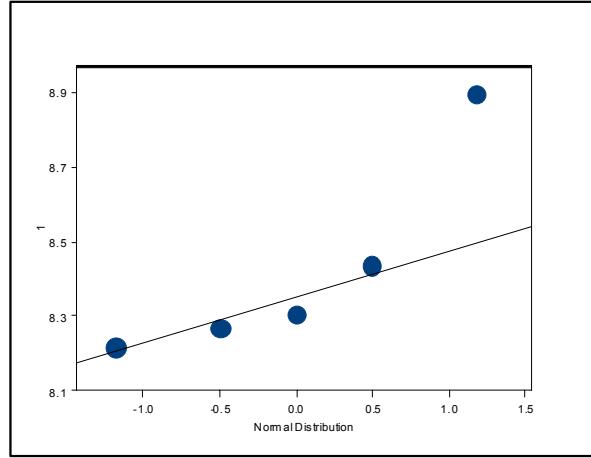


Figure E-30. Normal-quantile plot for ^{63}Ni ($\ln[\text{x}]$ transformation) data.

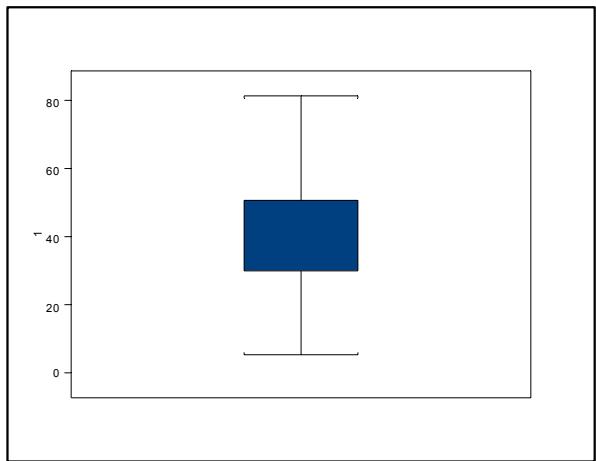


Figure E-31. Boxplot for ^{237}Np data.

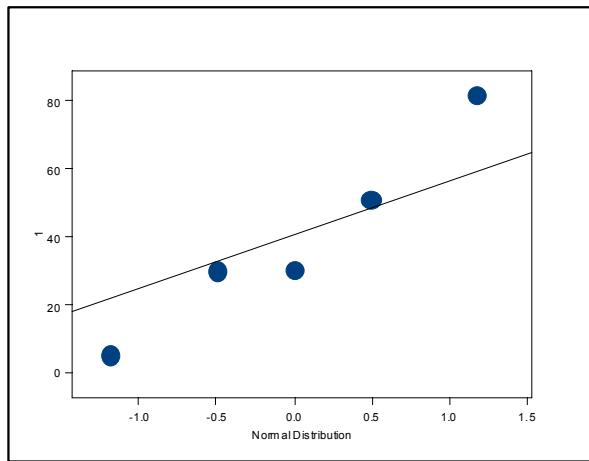


Figure E-32. Normal-quantile plot for ^{237}Np data.

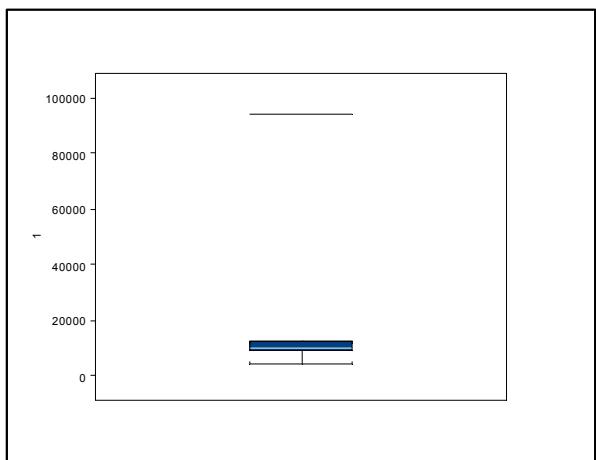


Figure E-33. Boxplot for ^{238}Pu data.

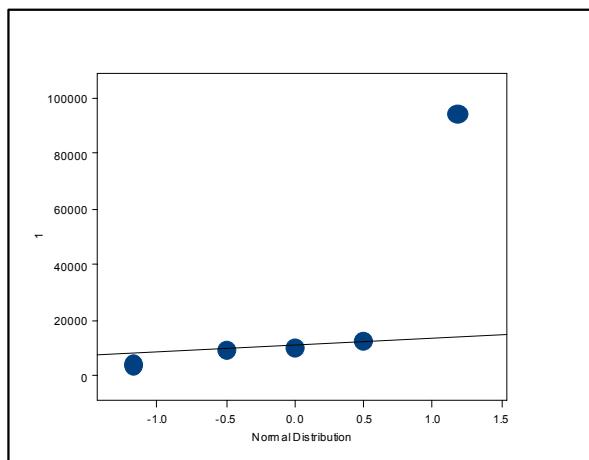


Figure E-34. Normal-quantile plot for ^{238}Pu data.

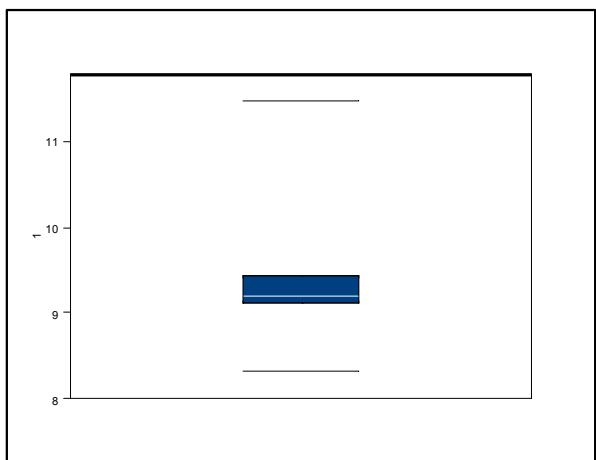


Figure E-35. Boxplot for ^{238}Pu ($\ln[\text{x}]$ transformation) data.

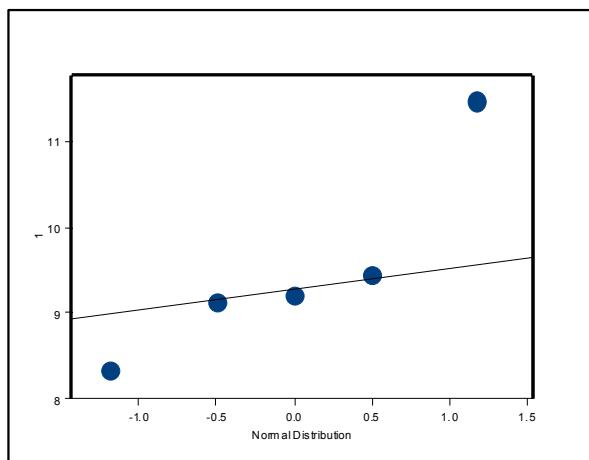


Figure E-36. Normal-quantile plot for ^{238}Pu ($\ln[\text{x}]$ transformation) data.

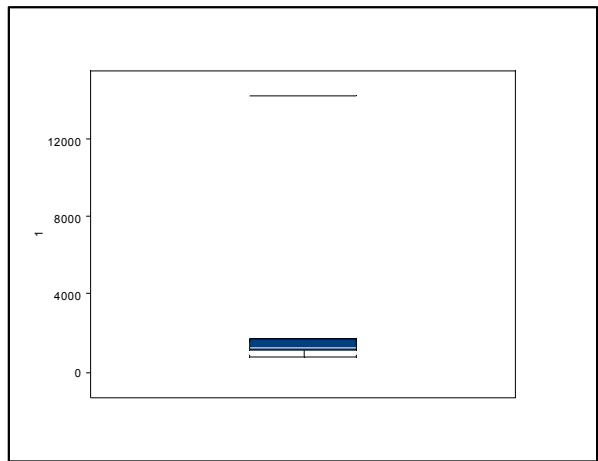


Figure E-37. Boxplot for $^{239/240}\text{Pu}$ data.

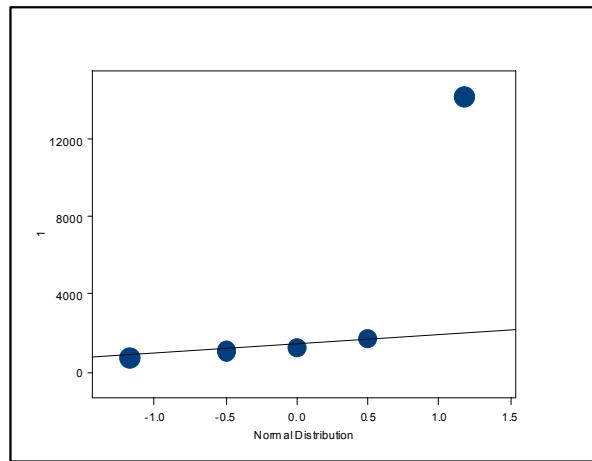


Figure E-38. Normal-quantile plot for $^{239/240}\text{Pu}$ data.

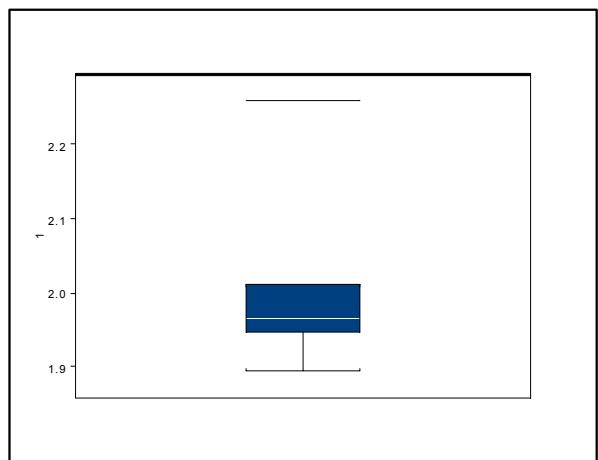


Figure E-39. Boxplot for $^{239/240}\text{Pu}$ ($\ln[\ln(x)]$ transformation) data.

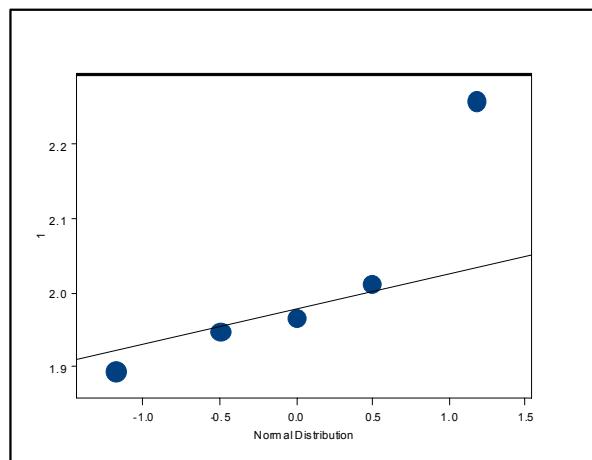


Figure E-40. Normal-quantile plot for $^{239/240}\text{Pu}$ ($\ln[\ln(x)]$ transformation) data.

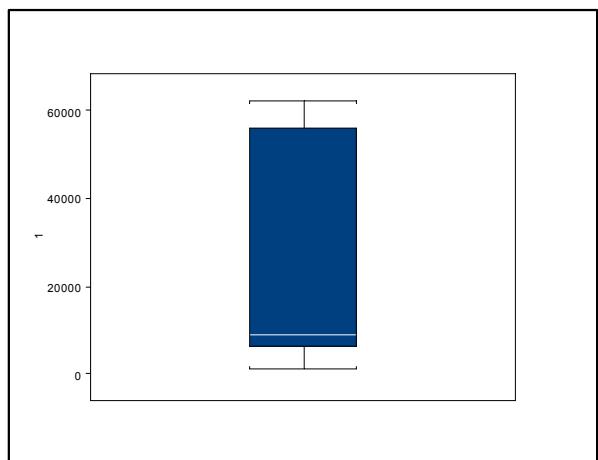


Figure E-41. Boxplot for ^{241}Pu data.

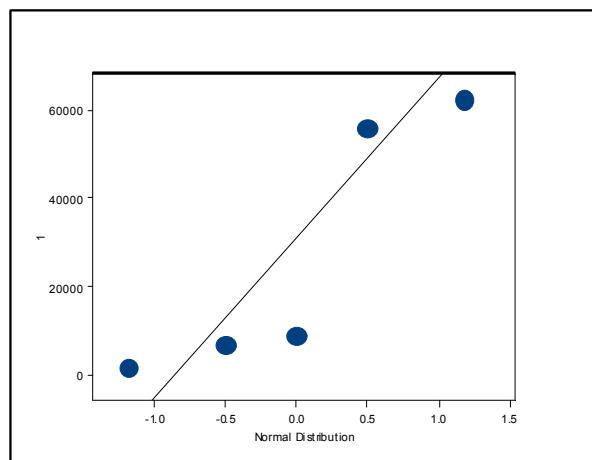


Figure E-42. Normal-quantile plot for ^{241}Pu data.

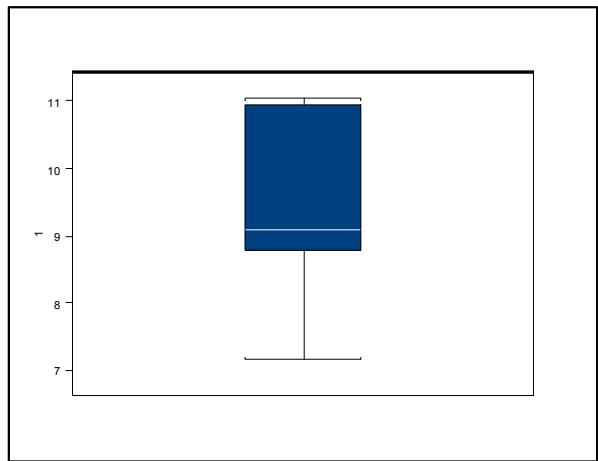


Figure E-43. Boxplot for ^{241}Pu ($\ln[x]$ transformation) data.

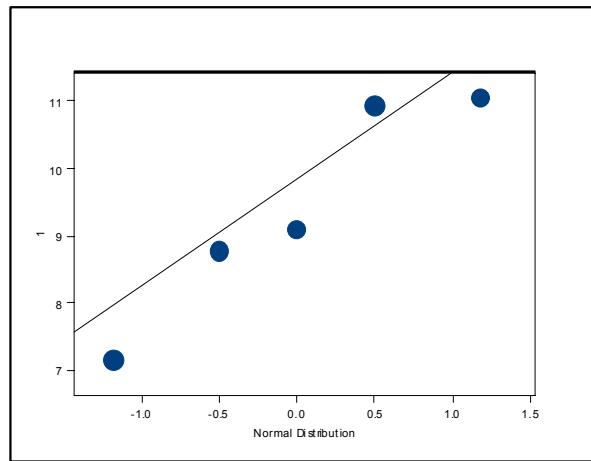


Figure E-44. Normal-quantile plot for ^{241}Pu ($\ln[x]$ transformation) data.

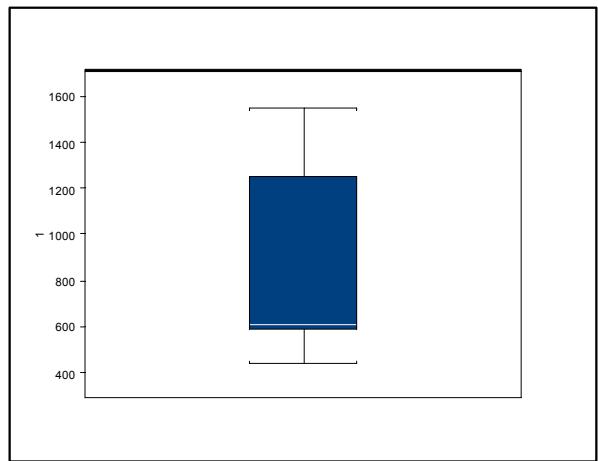


Figure E-47. Boxplot for ^{99}Tc data.

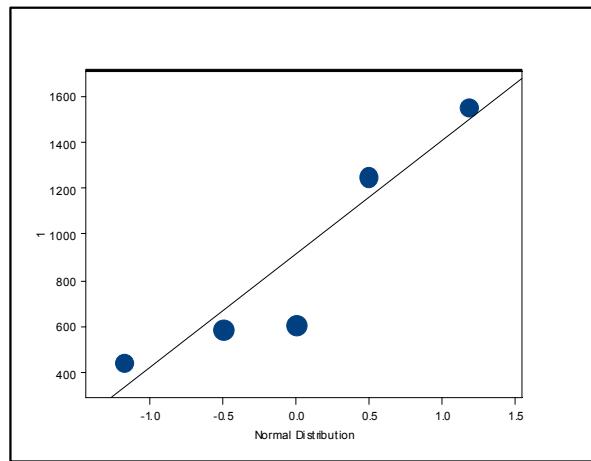


Figure E-48. Normal-quantile plot for ^{99}Tc data.

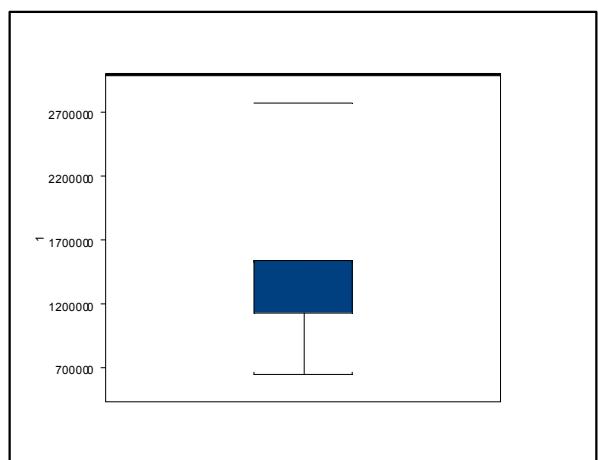


Figure E-49. Boxplot for total Sr data.

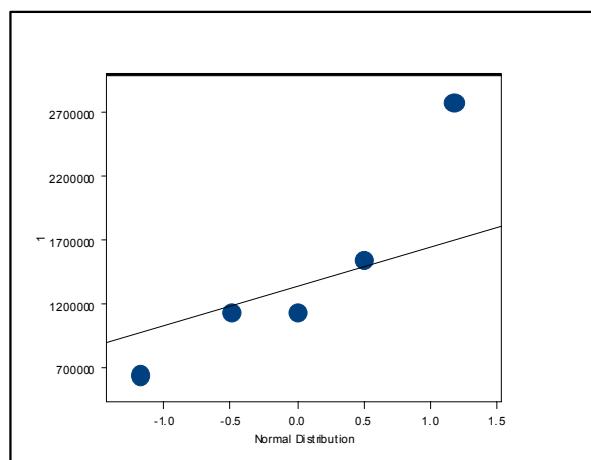
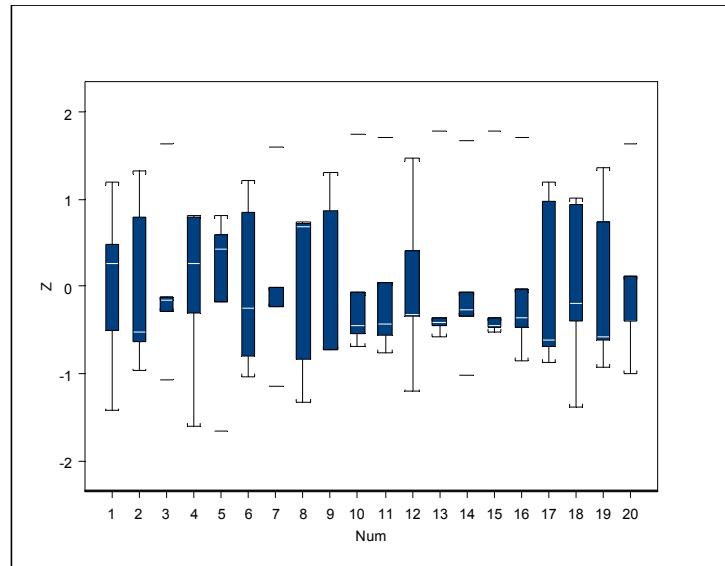


Figure E-50. Normal-quantile plot for total Sr data.



Radionuclide	Number
^{241}Am	1
^{125}Sb	2
^{60}Co	3
^{134}Cs	4
^{137}Cs	5
^{154}Eu	6
^3H	7
^{129}I	8
^{94}Nb	9
^{63}Ni	10
$^{63}\text{Ni}(\ln[x] \text{ transformation})$	11
^{237}Np	12
^{238}Pu	13
$^{238}\text{Pu} (\ln[x] \text{ transformation})$	14
$^{239/240}\text{Pu}$	15
$^{239/240}\text{Pu} (\ln[\ln(x)] \text{ transformation})$	16
^{241}Pu	17
$^{241}\text{Pu} (\ln[x] \text{ transformation})$	18
^{99}Tc	19
Total Sr	20

Figure E-51. Grouped boxplots of radionuclide data. Data have been standardized so that distributions are directly comparable.

Appendix F

Reported Results for Metals

Table F-1. Reported results for metals.

Field Sample ID	Location	Lab Sample ID	Type	CAS Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100101XM	WM-186 TR-5	3CA31	INORG (METALS)	7429-90-5	Aluminum	2.12E+02	µg/L		
CP10100201XM	WM-186 TR-6	3CA19	INORG (METALS)	7429-90-5	Aluminum	8.60E+02	µg/L		
CP10100301XM	WM-186 TR-8	3CA25	INORG (METALS)	7429-90-5	Aluminum	3.92E+02	µg/L		
CP10100401XM	WM-186 TR-8	3CA37	INORG (METALS)	7429-90-5	Aluminum	3.68E+02	µg/L		
CP10100501XM	WM-186 TR-6	3CA43	INORG (METALS)	7429-90-5	Aluminum	3.41E+02	µg/L		
CP10100101XM	WM-186 TR-5	3CA31	INORG (METALS)	7440-36-0	Antimony	6.50E+00	µg/L	U	
CP10100201XM	WM-186 TR-6	3CA19	INORG (METALS)	7440-36-0	Antimony	6.50E+00	µg/L	U	
CP10100301XM	WM-186 TR-8	3CA25	INORG (METALS)	7440-36-0	Antimony	6.50E+00	µg/L	U	
CP10100401XM	WM-186 TR-8	3CA37	INORG (METALS)	7440-36-0	Antimony	6.50E+00	µg/L	U	
CP10100501XM	WM-186 TR-6	3CA43	INORG (METALS)	7440-36-0	Antimony	6.50E+00	µg/L	U	
CP10100101XM	WM-186 TR-5	3CA31	INORG (METALS)	7440-38-2	Arsenic	4.70E+00	µg/L	U	
CP10100201XM	WM-186 TR-6	3CA19	INORG (METALS)	7440-38-2	Arsenic	4.70E+00	µg/L	U	
CP10100301XM	WM-186 TR-8	3CA25	INORG (METALS)	7440-38-2	Arsenic	4.70E+00	µg/L	U	
CP10100401XM	WM-186 TR-8	3CA37	INORG (METALS)	7440-38-2	Arsenic	4.70E+00	µg/L	U	
CP10100501XM	WM-186 TR-6	3CA43	INORG (METALS)	7440-38-2	Arsenic	4.70E+00	µg/L	U	
CP10100101XM	WM-186 TR-5	3CA31	INORG (METALS)	7440-39-3	Barium	4.00E-01	µg/L	B	U
CP10100201XM	WM-186 TR-6	3CA19	INORG (METALS)	7440-39-3	Barium	9.00E-01	µg/L	B	U
CP10100301XM	WM-186 TR-8	3CA25	INORG (METALS)	7440-39-3	Barium	6.00E-01	µg/L	B	U
CP10100401XM	WM-186 TR-8	3CA37	INORG (METALS)	7440-39-3	Barium	7.00E-01	µg/L	B	U
CP10100501XM	WM-186 TR-6	3CA43	INORG (METALS)	7440-39-3	Barium	4.00E-01	µg/L	B	U
CP10100101XM	WM-186 TR-5	3CA31	INORG (METALS)	7440-41-7	Beryllium	2.00E-01	µg/L	U	
CP10100201XM	WM-186 TR-6	3CA19	INORG (METALS)	7440-41-7	Beryllium	2.00E-01	µg/L	U	
CP10100301XM	WM-186 TR-8	3CA25	INORG (METALS)	7440-41-7	Beryllium	2.00E-01	µg/L	U	
CP10100401XM	WM-186 TR-8	3CA37	INORG (METALS)	7440-41-7	Beryllium	2.00E-01	µg/L	U	
CP10100501XM	WM-186 TR-6	3CA43	INORG (METALS)	7440-41-7	Beryllium	2.00E-01	µg/L	U	

Table F-1. (continued).

Field Sample ID	Location	Lab Sample ID	Type	CAS Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100101XM	WM-186 TR-5	3CA31	INORG (METALS)	7440-43-9	Cadmium	2.10E+00	µg/L	B	
CP10100201XM	WM-186 TR-6	3CA19	INORG (METALS)	7440-43-9	Cadmium	6.70E+00	µg/L		
CP10100301XM	WM-186 TR-8	3CA25	INORG (METALS)	7440-43-9	Cadmium	4.80E+00	µg/L	B	
CP10100401XM	WM-186 TR-8	3CA37	INORG (METALS)	7440-43-9	Cadmium	3.80E+00	µg/L	B	
CP10100501XM	WM-186 TR-6	3CA43	INORG (METALS)	7440-43-9	Cadmium	3.90E+00	µg/L	B	
CP10100101XM	WM-186 TR-5	3CA31	INORG (METALS)	7440-70-2	Calcium	9.18E+01	µg/L	B	
CP10100201XM	WM-186 TR-6	3CA19	INORG (METALS)	7440-70-2	Calcium	3.12E+02	µg/L	B	
CP10100301XM	WM-186 TR-8	3CA25	INORG (METALS)	7440-70-2	Calcium	2.04E+02	µg/L	B	
CP10100401XM	WM-186 TR-8	3CA37	INORG (METALS)	7440-70-2	Calcium	1.30E+02	µg/L	B	
CP10100501XM	WM-186 TR-6	3CA43	INORG (METALS)	7440-70-2	Calcium	1.36E+02	µg/L	B	
CP10100101XM	WM-186 TR-5	3CA31	INORG (METALS)	7440-47-3	Chromium	4.40E+00	µg/L	B	
CP10100201XM	WM-186 TR-6	3CA19	INORG (METALS)	7440-47-3	Chromium	1.75E+01	µg/L		
CP10100301XM	WM-186 TR-8	3CA25	INORG (METALS)	7440-47-3	Chromium	8.50E+00	µg/L	B	
CP10100401XM	WM-186 TR-8	3CA37	INORG (METALS)	7440-47-3	Chromium	9.90E+00	µg/L	B	
CP10100501XM	WM-186 TR-6	3CA43	INORG (METALS)	7440-47-3	Chromium	8.80E+00	µg/L	B	
CP10100101XM	WM-186 TR-5	3CA31	INORG (METALS)	7440-48-4	Cobalt	1.00E+00	µg/L	U	
CP10100201XM	WM-186 TR-6	3CA19	INORG (METALS)	7440-48-4	Cobalt	1.00E+00	µg/L	U	
CP10100301XM	WM-186 TR-8	3CA25	INORG (METALS)	7440-48-4	Cobalt	1.00E+00	µg/L	U	
CP10100401XM	WM-186 TR-8	3CA37	INORG (METALS)	7440-48-4	Cobalt	1.00E+00	µg/L	U	
CP10100501XM	WM-186 TR-6	3CA43	INORG (METALS)	7440-48-4	Cobalt	1.00E+00	µg/L	U	
CP10100101XM	WM-186 TR-5	3CA31	INORG (METALS)	7440-50-8	Copper	1.50E+00	µg/L	U	
CP10100201XM	WM-186 TR-6	3CA19	INORG (METALS)	7440-50-8	Copper	3.10E+00	µg/L	B	
CP10100301XM	WM-186 TR-8	3CA25	INORG (METALS)	7440-50-8	Copper	2.20E+00	µg/L	B	
CP10100401XM	WM-186 TR-8	3CA37	INORG (METALS)	7440-50-8	Copper	2.20E+00	µg/L	B	
CP10100501XM	WM-186 TR-6	3CA43	INORG (METALS)	7440-50-8	Copper	2.00E+00	µg/L	B	
CP10100101XM	WM-186 TR-5	3CA31	INORG (METALS)	7439-89-6	Iron	1.28E+01	µg/L	B	

Table F-1. (continued).

Field Sample ID	Location	Lab Sample ID	Type	CAS Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100201XM	WM-186 TR-6	3CA19	INORG (METALS)	7439-89-6	Iron	8.30E+00	µg/L	B	
CP10100301XM	WM-186 TR-8	3CA25	INORG (METALS)	7439-89-6	Iron	7.20E+00	µg/L	B	
CP10100401XM	WM-186 TR-8	3CA37	INORG (METALS)	7439-89-6	Iron	5.65E+01	µg/L	B	
CP10100501XM	WM-186 TR-6	3CA43	INORG (METALS)	7439-89-6	Iron	5.81E+01	µg/L	B	
CP10100101XM	WM-186 TR-5	3CA31	INORG (METALS)	7439-92-1	Lead	3.70E+00	µg/L	U	
CP10100201XM	WM-186 TR-6	3CA19	INORG (METALS)	7439-92-1	Lead	3.70E+00	µg/L	U	
CP10100301XM	WM-186 TR-8	3CA25	INORG (METALS)	7439-92-1	Lead	3.70E+00	µg/L	U	
CP10100401XM	WM-186 TR-8	3CA37	INORG (METALS)	7439-92-1	Lead	3.70E+00	µg/L	U	
CP10100501XM	WM-186 TR-6	3CA43	INORG (METALS)	7439-92-1	Lead	6.60E+00	µg/L	B	U
CP10100101XM	WM-186 TR-5	3CA31	INORG (METALS)	7439-95-4	Magnesium	3.39E+01	µg/L	B	U
CP10100201XM	WM-186 TR-6	3CA19	INORG (METALS)	7439-95-4	Magnesium	9.45E+01	µg/L	B	
CP10100301XM	WM-186 TR-8	3CA25	INORG (METALS)	7439-95-4	Magnesium	6.47E+01	µg/L	B	U
CP10100401XM	WM-186 TR-8	3CA37	INORG (METALS)	7439-95-4	Magnesium	5.04E+01	µg/L	B	U
CP10100501XM	WM-186 TR-6	3CA43	INORG (METALS)	7439-95-4	Magnesium	4.67E+01	µg/L	B	U
CP10100101XM	WM-186 TR-5	3CA31	INORG (METALS)	7439-96-5	Manganese	1.28E+01	µg/L	B	
CP10100201XM	WM-186 TR-6	3CA19	INORG (METALS)	7439-96-5	Manganese	6.05E+01	µg/L		
CP10100301XM	WM-186 TR-8	3CA25	INORG (METALS)	7439-96-5	Manganese	3.25E+01	µg/L		
CP10100401XM	WM-186 TR-8	3CA37	INORG (METALS)	7439-96-5	Manganese	2.37E+01	µg/L		
CP10100501XM	WM-186 TR-6	3CA43	INORG (METALS)	7439-96-5	Manganese	2.37E+01	µg/L		
CP10100101XM	WM-186 TR-5	3CA31	INORG (METALS)	7439-97-6	Mercury	1.70E+01	µg/L		
CP10100201XM	WM-186 TR-6	3CA19	INORG (METALS)	7439-97-6	Mercury	1.99E+01	µg/L		
CP10100301XM	WM-186 TR-8	3CA25	INORG (METALS)	7439-97-6	Mercury	1.28E+01	µg/L		
CP10100401XM	WM-186 TR-8	3CA37	INORG (METALS)	7439-97-6	Mercury	1.81E+01	µg/L		
CP10100501XM	WM-186 TR-6	3CA43	INORG (METALS)	7439-97-6	Mercury	1.71E+01	µg/L		
CP10100101XM	WM-186 TR-5	3CA31	INORG (METALS)	7439-98-7	Molybdenum	4.00E+00	µg/L	U	
CP10100201XM	WM-186 TR-6	3CA19	INORG (METALS)	7439-98-7	Molybdenum	4.00E+00	µg/L	U	

Table F-1. (continued).

Field Sample ID	Location	Lab Sample ID	Type	CAS Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100301XM	WM-186 TR-8	3CA25	INORG (METALS)	7439-98-7	Molybdenum	4.00E+00	µg/L	U	
CP10100401XM	WM-186 TR-8	3CA37	INORG (METALS)	7439-98-7	Molybdenum	4.00E+00	µg/L	U	
CP10100501XM	WM-186 TR-6	3CA43	INORG (METALS)	7439-98-7	Molybdenum	4.00E+00	µg/L	U	
CP10100101XM	WM-186 TR-5	3CA31	INORG (METALS)	7440-02-0	Nickel	6.60E+00	µg/L	B	
CP10100201XM	WM-186 TR-6	3CA19	INORG (METALS)	7440-02-0	Nickel	2.25E+01	µg/L	B	
CP10100301XM	WM-186 TR-8	3CA25	INORG (METALS)	7440-02-0	Nickel	1.25E+01	µg/L	B	
CP10100401XM	WM-186 TR-8	3CA37	INORG (METALS)	7440-02-0	Nickel	9.80E+00	µg/L	B	
CP10100501XM	WM-186 TR-6	3CA43	INORG (METALS)	7440-02-0	Nickel	9.50E+00	µg/L	B	
CP10100101XM	WM-186 TR-5	3CA31	INORG (METALS)	7440-09-7	Potassium	6.16E+02	µg/L	B	
CP10100201XM	WM-186 TR-6	3CA19	INORG (METALS)	7440-09-7	Potassium	1.13E+03	µg/L	B	
CP10100301XM	WM-186 TR-8	3CA25	INORG (METALS)	7440-09-7	Potassium	1.06E+03	µg/L	B	
CP10100401XM	WM-186 TR-8	3CA37	INORG (METALS)	7440-09-7	Potassium	6.46E+02	µg/L	B	
CP10100501XM	WM-186 TR-6	3CA43	INORG (METALS)	7440-09-7	Potassium	6.77E+02	µg/L	B	
CP10100101XM	WM-186 TR-5	3CA31	INORG (METALS)	7782-49-2	Selenium	4.90E+00	µg/L	U	
CP10100201XM	WM-186 TR-6	3CA19	INORG (METALS)	7782-49-2	Selenium	4.90E+00	µg/L	U	
CP10100301XM	WM-186 TR-8	3CA25	INORG (METALS)	7782-49-2	Selenium	4.90E+00	µg/L	U	
CP10100401XM	WM-186 TR-8	3CA37	INORG (METALS)	7782-49-2	Selenium	4.90E+00	µg/L	U	
CP10100501XM	WM-186 TR-6	3CA43	INORG (METALS)	7782-49-2	Selenium	4.90E+00	µg/L	U	
CP10100101XM	WM-186 TR-5	3CA31	INORG (METALS)	7440-22-4	Silver	2.95E+01	µg/L		
CP10100201XM	WM-186 TR-6	3CA19	INORG (METALS)	7440-22-4	Silver	4.54E+01	µg/L		
CP10100301XM	WM-186 TR-8	3CA25	INORG (METALS)	7440-22-4	Silver	5.09E+01	µg/L		
CP10100401XM	WM-186 TR-8	3CA37	INORG (METALS)	7440-22-4	Silver	3.15E+01	µg/L		
CP10100501XM	WM-186 TR-6	3CA43	INORG (METALS)	7440-22-4	Silver	3.08E+01	µg/L		
CP10100101XM	WM-186 TR-5	3CA31	INORG (METALS)	7440-23-5	Sodium	1.17E+03	µg/L	B	
CP10100201XM	WM-186 TR-6	3CA19	INORG (METALS)	7440-23-5	Sodium	3.14E+03	µg/L	B	
CP10100301XM	WM-186 TR-8	3CA25	INORG (METALS)	7440-23-5	Sodium	2.38E+03	µg/L	B	

Table F-1. (continued).

Field Sample ID	Location	Lab Sample ID	Type	CAS Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100401XM	WM-186 TR-8	3CA37	INORG (METALS)	7440-23-5	Sodium	1.58E+03	µg/L	B	
CP10100501XM	WM-186 TR-6	3CA43	INORG (METALS)	7440-23-5	Sodium	1.54E+03	µg/L	B	
CP10100101XM	WM-186 TR-5	3CA31	INORG (METALS)	7440-28-0	Thallium	4.90E+00	µg/L	U	
CP10100201XM	WM-186 TR-6	3CA19	INORG (METALS)	7440-28-0	Thallium	4.90E+00	µg/L	U	
CP10100301XM	WM-186 TR-8	3CA25	INORG (METALS)	7440-28-0	Thallium	4.90E+00	µg/L	U	
CP10100401XM	WM-186 TR-8	3CA37	INORG (METALS)	7440-28-0	Thallium	4.90E+00	µg/L	U	
CP10100501XM	WM-186 TR-6	3CA43	INORG (METALS)	7440-28-0	Thallium	4.90E+00	µg/L	U	
CP10100101XM	WM-186 TR-5	3CA31	INORG (METALS)	7440-62-2	Vanadium	2.80E+00	µg/L	U	
CP10100201XM	WM-186 TR-6	3CA19	INORG (METALS)	7440-62-2	Vanadium	2.80E+00	µg/L	U	
CP10100301XM	WM-186 TR-8	3CA25	INORG (METALS)	7440-62-2	Vanadium	2.80E+00	µg/L	U	
CP10100401XM	WM-186 TR-8	3CA37	INORG (METALS)	7440-62-2	Vanadium	2.80E+00	µg/L	U	
CP10100501XM	WM-186 TR-6	3CA43	INORG (METALS)	7440-62-2	Vanadium	2.80E+00	µg/L	U	
CP10100101XM	WM-186 TR-5	3CA31	INORG (METALS)	7440-66-6	Zinc	3.80E+00	µg/L	B	
CP10100201XM	WM-186 TR-6	3CA19	INORG (METALS)	7440-66-6	Zinc	6.30E+00	µg/L	B	
CP10100301XM	WM-186 TR-8	3CA25	INORG (METALS)	7440-66-6	Zinc	5.30E+00	µg/L	B	
CP10100401XM	WM-186 TR-8	3CA37	INORG (METALS)	7440-66-6	Zinc	5.10E+00	µg/L	B	
CP10100501XM	WM-186 TR-6	3CA43	INORG (METALS)	7440-66-6	Zinc	5.70E+00	µg/L	B	

a. Laboratory flags:

B=Analyte was below the required detection limit but greater than or equal to the instrument detection limit

U=Analyte was analyzed for but not detected.

b. Validator flags:

U=Undetected.

Appendix G

Reported Results for pH and Anions

Table G-1. Reported results for pH and anions.

Field Sample ID	Location	Lab Sample ID	Type	CAS Number	Compound	Result	Units	Lab Flag ^a	Validator Flag
CP10100101AN	WM-186 TR-5	3CA32	INORG (MISCELLANEOUS)	16887-00-6	Chloride	0.14	mg/L	J	
CP10100201AN	WM-186 TR-6	3CA20	INORG (MISCELLANEOUS)	16887-00-6	Chloride	0.16	mg/L	J	
CP10100301AN	WM-186 TR-8	3CA26	INORG (MISCELLANEOUS)	16887-00-6	Chloride	0.14	mg/L	J	
CP10100401AN	WM-186 TR-8	3CA38	INORG (MISCELLANEOUS)	16887-00-6	Chloride	0.12	mg/L	J	
CP10100501AN	WM-186 TR-6	3CA44	INORG (MISCELLANEOUS)	16887-00-6	Chloride	0.11	mg/L	J	
CP10100101AN	WM-186 TR-5	3CA32	INORG (MISCELLANEOUS)	16984-48-8	Fluoride	0.29	mg/L		
CP10100201AN	WM-186 TR-6	3CA20	INORG (MISCELLANEOUS)	16984-48-8	Fluoride	0.39	mg/L		
CP10100301AN	WM-186 TR-8	3CA26	INORG (MISCELLANEOUS)	16984-48-8	Fluoride	0.031	mg/L	U	
CP10100401AN	WM-186 TR-8	3CA38	INORG (MISCELLANEOUS)	16984-48-8	Fluoride	0.24	mg/L		
CP10100501AN	WM-186 TR-6	3CA44	INORG (MISCELLANEOUS)	16984-48-8	Fluoride	0.031	mg/L	U	
CP10100101AN	WM-186 TR-5	3CA32	INORG (MISCELLANEOUS)	*Nitrate	Nitrate	2.13	mg-N/L		
CP10100201AN	WM-186 TR-6	3CA20	INORG (MISCELLANEOUS)	*Nitrate	Nitrate	5.54	mg-N/L		
CP10100301AN	WM-186 TR-8	3CA26	INORG (MISCELLANEOUS)	*Nitrate	Nitrate	4.4	mg-N/L		
CP10100401AN	WM-186 TR-8	3CA38	INORG (MISCELLANEOUS)	*Nitrate	Nitrate	2.94	mg-N/L		
CP10100501AN	WM-186 TR-6	3CA44	INORG (MISCELLANEOUS)	*Nitrate	Nitrate	2.82	mg-N/L		
CP10100101PH	WM-186 TR-5	3CA33	INORG (MISCELLANEOUS)	*pH	pH	3.9	NA		
CP10100201PH	WM-186 TR-6	3CA21	INORG (MISCELLANEOUS)	*pH	pH	3.8	NA		
CP10100301PH	WM-186 TR-8	3CA27	INORG (MISCELLANEOUS)	*pH	pH	3.7	NA		
CP10100401PH	WM-186 TR-8	3CA39	INORG (MISCELLANEOUS)	*pH	pH	3.9	NA		
CP10100501PH	WM-186 TR-6	3CA45	INORG (MISCELLANEOUS)	*pH	pH	3.9	NA		
CP10100101AN	WM-186 TR-5	3CA32	INORG (MISCELLANEOUS)	*Phosphate	Phosphate	0.19	mg-P/L	J	
CP10100201AN	WM-186 TR-6	3CA20	INORG (MISCELLANEOUS)	*Phosphate	Phosphate	0.1	mg-P/L	J	
CP10100301AN	WM-186 TR-8	3CA26	INORG (MISCELLANEOUS)	*Phosphate	Phosphate	0.11	mg-P/L	J	

G3

Table G-1. (continued).

Field Sample ID	Location	Lab Sample ID	Type	CAS Number	Compound	Result	Units	Lab Flag ^a	Validator Flag
CP10100401AN	WM-186 TR-8	3CA38	INORG (MISCELLANEOUS)	*Phosphate	Phosphate	0.23	mg-P/L		
CP10100501AN	WM-186 TR-6	3CA44	INORG (MISCELLANEOUS)	*Phosphate	Phosphate	0.19	mg-P/L	J	
CP10100101AN	WM-186 TR-5	3CA32	INORG (MISCELLANEOUS)	14808-79-8	Sulfate	0.53	mg/L		
CP10100201AN	WM-186 TR-6	3CA20	INORG (MISCELLANEOUS)	14808-79-8	Sulfate	0.92	mg/L		
CP10100301AN	WM-186 TR-8	3CA26	INORG (MISCELLANEOUS)	14808-79-8	Sulfate	0.64	mg/L		
CP10100401AN	WM-186 TR-8	3CA38	INORG (MISCELLANEOUS)	14808-79-8	Sulfate	0.64	mg/L		
CP10100501AN	WM-186 TR-6	3CA44	INORG (MISCELLANEOUS)	14808-79-8	Sulfate	0.69	mg/L		

a. Laboratory flags:

J=Estimated value. Estimated values are less than five times the method detection limit for this analyte.

U=Undetected.

Appendix H

Reported Results for Organics

Table H-1. Reported results for organics.

Field Sample ID	Location	Lab Sample ID	Type	CAS-Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100101PC	WM-186 TR-5	0311034-20A	ORG (PCB)	12674-11-2	Aroclor-1016	10	µg/L	U	UJ
CP10100201PC	WM-186 TR-6	0311034-21A	ORG (PCB)	12674-11-2	Aroclor-1016	10	µg/L	U	UJ
CP10100301PC	WM-186 TR-8	0311034-22A	ORG (PCB)	12674-11-2	Aroclor-1016	10	µg/L	U	UJ
CP10100401PC	WM-186 TR-8	0311034-23A	ORG (PCB)	12674-11-2	Aroclor-1016	10	µg/L	U	UJ
CP10100501PC	WM-186 TR-6	0311034-24A	ORG (PCB)	12674-11-2	Aroclor-1016	10	µg/L	U	UJ
CP10100101PC	WM-186 TR-5	0311034-20A	ORG (PCB)	11104-28-2	Aroclor-1221	10	µg/L	U	
CP10100201PC	WM-186 TR-6	0311034-21A	ORG (PCB)	11104-28-2	Aroclor-1221	10	µg/L	U	
CP10100301PC	WM-186 TR-8	0311034-22A	ORG (PCB)	11104-28-2	Aroclor-1221	10	µg/L	U	
CP10100401PC	WM-186 TR-8	0311034-23A	ORG (PCB)	11104-28-2	Aroclor-1221	10	µg/L	U	
CP10100501PC	WM-186 TR-6	0311034-24A	ORG (PCB)	11104-28-2	Aroclor-1221	10	µg/L	U	
CP10100101PC	WM-186 TR-5	0311034-20A	ORG (PCB)	11141-16-5	Aroclor-1232	10	µg/L	U	
CP10100201PC	WM-186 TR-6	0311034-21A	ORG (PCB)	11141-16-5	Aroclor-1232	10	µg/L	U	
CP10100301PC	WM-186 TR-8	0311034-22A	ORG (PCB)	11141-16-5	Aroclor-1232	10	µg/L	U	
CP10100401PC	WM-186 TR-8	0311034-23A	ORG (PCB)	11141-16-5	Aroclor-1232	10	µg/L	U	
CP10100501PC	WM-186 TR-6	0311034-24A	ORG (PCB)	11141-16-5	Aroclor-1232	10	µg/L	U	
CP10100101PC	WM-186 TR-5	0311034-20A	ORG (PCB)	53469-21-9	Aroclor-1242	10	µg/L	U	
CP10100201PC	WM-186 TR-6	0311034-21A	ORG (PCB)	53469-21-9	Aroclor-1242	10	µg/L	U	
CP10100301PC	WM-186 TR-8	0311034-22A	ORG (PCB)	53469-21-9	Aroclor-1242	10	µg/L	U	
CP10100401PC	WM-186 TR-8	0311034-23A	ORG (PCB)	53469-21-9	Aroclor-1242	10	µg/L	U	
CP10100501PC	WM-186 TR-6	0311034-24A	ORG (PCB)	53469-21-9	Aroclor-1242	10	µg/L	U	
CP10100101PC	WM-186 TR-5	0311034-20A	ORG (PCB)	12672-29-6	Aroclor-1248	10	µg/L	U	
CP10100201PC	WM-186 TR-6	0311034-21A	ORG (PCB)	12672-29-6	Aroclor-1248	10	µg/L	U	
CP10100301PC	WM-186 TR-8	0311034-22A	ORG (PCB)	12672-29-6	Aroclor-1248	10	µg/L	U	

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Table H-1. (continued).

Field Sample ID	Location	Lab Sample ID	Type	CAS-Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100401PC	WM-186 TR-8	0311034-23A	ORG (PCB)	12672-29-6	Aroclor-1248	10	µg/L	U	
CP10100501PC	WM-186 TR-6	0311034-24A	ORG (PCB)	12672-29-6	Aroclor-1248	10	µg/L	U	
CP10100101PC	WM-186 TR-5	0311034-20A	ORG (PCB)	11097-69-1	Aroclor-1254	10	µg/L	U	
CP10100201PC	WM-186 TR-6	0311034-21A	ORG (PCB)	11097-69-1	Aroclor-1254	10	µg/L	U	
CP10100301PC	WM-186 TR-8	0311034-22A	ORG (PCB)	11097-69-1	Aroclor-1254	10	µg/L	U	
CP10100401PC	WM-186 TR-8	0311034-23A	ORG (PCB)	11097-69-1	Aroclor-1254	10	µg/L	U	
CP10100501PC	WM-186 TR-6	0311034-24A	ORG (PCB)	11097-69-1	Aroclor-1254	10	µg/L	U	
CP10100101PC	WM-186 TR-5	0311034-20A	ORG (PCB)	11096-82-5	Aroclor-1260	10	µg/L	U	
CP10100201PC	WM-186 TR-6	0311034-21A	ORG (PCB)	11096-82-5	Aroclor-1260	10	µg/L	U	
CP10100301PC	WM-186 TR-8	0311034-22A	ORG (PCB)	11096-82-5	Aroclor-1260	10	µg/L	U	
CP10100401PC	WM-186 TR-8	0311034-23A	ORG (PCB)	11096-82-5	Aroclor-1260	10	µg/L	U	
CP10100501PC	WM-186 TR-6	0311034-24A	ORG (PCB)	11096-82-5	Aroclor-1260	10	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	92-52-4	1,1'-Biphenyl	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	92-52-4	1,1'-Biphenyl	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	92-52-4	1,1'-Biphenyl	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	92-52-4	1,1'-Biphenyl	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	92-52-4	1,1'-Biphenyl	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	108-60-1	2,2'-oxybis(1-Chloropropane)	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	108-60-1	2,2'-oxybis(1-Chloropropane)	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	108-60-1	2,2'-oxybis(1-Chloropropane)	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	108-60-1	2,2'-oxybis(1-Chloropropane)	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	108-60-1	2,2'-oxybis(1-Chloropropane)	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	95-95-4	2,4,5-Trichlorophenol	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	95-95-4	2,4,5-Trichlorophenol	11.1	µg/L	U	

Table H-1. (continued).

Field Sample ID	Location	Lab Sample ID	Type	CAS-Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	95-95-4	2,4,5-Trichlorophenol	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	95-95-4	2,4,5-Trichlorophenol	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	95-95-4	2,4,5-Trichlorophenol	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	88-06-2	2,4,6-Trichlorophenol	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	88-06-2	2,4,6-Trichlorophenol	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	88-06-2	2,4,6-Trichlorophenol	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	88-06-2	2,4,6-Trichlorophenol	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	88-06-2	2,4,6-Trichlorophenol	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	120-83-2	2,4-Dichlorophenol	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	120-83-2	2,4-Dichlorophenol	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	120-83-2	2,4-Dichlorophenol	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	120-83-2	2,4-Dichlorophenol	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	120-83-2	2,4-Dichlorophenol	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	105-67-9	2,4-Dimethylphenol	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	105-67-9	2,4-Dimethylphenol	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	105-67-9	2,4-Dimethylphenol	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	105-67-9	2,4-Dimethylphenol	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	105-67-9	2,4-Dimethylphenol	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	51-28-5	2,4-Dinitrophenol	10.4	µg/L	U	UJ
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	51-28-5	2,4-Dinitrophenol	11.1	µg/L	U	UJ
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	51-28-5	2,4-Dinitrophenol	10.6	µg/L	U	UJ
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	51-28-5	2,4-Dinitrophenol	10	µg/L	U	UJ
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	51-28-5	2,4-Dinitrophenol	10.9	µg/L	U	UJ
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	121-14-2	2,4-Dinitrotoluene	10.4	µg/L	U	

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Table H-1. (continued).

Field Sample ID	Location	Lab Sample ID	Type	CAS-Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	121-14-2	2,4-Dinitrotoluene	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	121-14-2	2,4-Dinitrotoluene	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	121-14-2	2,4-Dinitrotoluene	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	121-14-2	2,4-Dinitrotoluene	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	606-20-2	2,6-Dinitrotoluene	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	606-20-2	2,6-Dinitrotoluene	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	606-20-2	2,6-Dinitrotoluene	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	606-20-2	2,6-Dinitrotoluene	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	606-20-2	2,6-Dinitrotoluene	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	91-58-7	2-Chloronaphthalene	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	91-58-7	2-Chloronaphthalene	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	91-58-7	2-Chloronaphthalene	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	91-58-7	2-Chloronaphthalene	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	91-58-7	2-Chloronaphthalene	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	95-57-8	2-Chlorophenol	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	95-57-8	2-Chlorophenol	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	95-57-8	2-Chlorophenol	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	95-57-8	2-Chlorophenol	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	95-57-8	2-Chlorophenol	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	91-57-6	2-Methylnaphthalene	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	91-57-6	2-Methylnaphthalene	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	91-57-6	2-Methylnaphthalene	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	91-57-6	2-Methylnaphthalene	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	91-57-6	2-Methylnaphthalene	10.9	µg/L	U	

Table H-1. (continued).

Field Sample ID	Location	Lab Sample ID	Type	CAS-Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	95-48-7	2-Methylphenol (o-Cresol)	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	95-48-7	2-Methylphenol (o-Cresol)	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	95-48-7	2-Methylphenol (o-Cresol)	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	95-48-7	2-Methylphenol (o-Cresol)	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	95-48-7	2-Methylphenol (o-Cresol)	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	88-74-4	2-Nitroaniline	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	88-74-4	2-Nitroaniline	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	88-74-4	2-Nitroaniline	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	88-74-4	2-Nitroaniline	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	88-74-4	2-Nitroaniline	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	88-75-5	2-Nitrophenol	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	88-75-5	2-Nitrophenol	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	88-75-5	2-Nitrophenol	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	88-75-5	2-Nitrophenol	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	88-75-5	2-Nitrophenol	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	91-94-1	3,3'-Dichlorobenzidine	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	91-94-1	3,3'-Dichlorobenzidine	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	91-94-1	3,3'-Dichlorobenzidine	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	91-94-1	3,3'-Dichlorobenzidine	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	91-94-1	3,3'-Dichlorobenzidine	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	99-09-2	3-Nitroaniline	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	99-09-2	3-Nitroaniline	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	99-09-2	3-Nitroaniline	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	99-09-2	3-Nitroaniline	10	µg/L	U	

Table H-1. (continued).

Field Sample ID	Location	Lab Sample ID	Type	CAS-Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	99-09-2	3-Nitroaniline	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	534-52-1	4,6-Dinitro-2-methylphenol	10.4	µg/L	U	UJ
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	534-52-1	4,6-Dinitro-2-methylphenol	11.1	µg/L	U	UJ
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	534-52-1	4,6-Dinitro-2-methylphenol	10.6	µg/L	U	UJ
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	534-52-1	4,6-Dinitro-2-methylphenol	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	534-52-1	4,6-Dinitro-2-methylphenol	10.9	µg/L	U	UJ
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	101-55-3	4-Bromophenyl phenyl ether	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	101-55-3	4-Bromophenyl phenyl ether	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	101-55-3	4-Bromophenyl phenyl ether	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	101-55-3	4-Bromophenyl phenyl ether	10	µg/L	U	UJ
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	101-55-3	4-Bromophenyl phenyl ether	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	59-50-7	4-Chloro-3-methylphenol	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	59-50-7	4-Chloro-3-methylphenol	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	59-50-7	4-Chloro-3-methylphenol	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	59-50-7	4-Chloro-3-methylphenol	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	59-50-7	4-Chloro-3-methylphenol	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	106-47-8	4-Chloroaniline	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	106-47-8	4-Chloroaniline	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	106-47-8	4-Chloroaniline	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	106-47-8	4-Chloroaniline	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	106-47-8	4-Chloroaniline	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	7005-72-3	4-Chlorophenyl phenyl ether	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	7005-72-3	4-Chlorophenyl phenyl ether	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	7005-72-3	4-Chlorophenyl phenyl ether	10.6	µg/L	U	

Table H-1. (continued).

Field Sample ID	Location	Lab Sample ID	Type	CAS-Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	7005-72-3	4-Chlorophenyl phenyl ether	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	7005-72-3	4-Chlorophenyl phenyl ether	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	106-44-5	4-Methylphenol (p-Cresol)	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	106-44-5	4-Methylphenol (p-Cresol)	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	106-44-5	4-Methylphenol (p-Cresol)	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	106-44-5	4-Methylphenol (p-Cresol)	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	106-44-5	4-Methylphenol (p-Cresol)	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	100-01-6	4-Nitroaniline	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	100-01-6	4-Nitroaniline	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	100-01-6	4-Nitroaniline	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	100-01-6	4-Nitroaniline	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	100-01-6	4-Nitroaniline	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	100-02-7	4-Nitrophenol	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	100-02-7	4-Nitrophenol	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	100-02-7	4-Nitrophenol	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	100-02-7	4-Nitrophenol	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	100-02-7	4-Nitrophenol	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	83-32-9	Acenaphthene	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	83-32-9	Acenaphthene	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	83-32-9	Acenaphthene	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	83-32-9	Acenaphthene	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	83-32-9	Acenaphthene	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	208-96-8	Acenaphthylene	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	208-96-8	Acenaphthylene	11.1	µg/L	U	

Table H-1. (continued).

Field Sample ID	Location	Lab Sample ID	Type	CAS-Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	208-96-8	Acenaphthylene	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	208-96-8	Acenaphthylene	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	208-96-8	Acenaphthylene	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	98-86-2	Acetophenone	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	98-86-2	Acetophenone	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	98-86-2	Acetophenone	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	98-86-2	Acetophenone	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	98-86-2	Acetophenone	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	120-12-7	Anthracene	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	120-12-7	Anthracene	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	120-12-7	Anthracene	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	120-12-7	Anthracene	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	120-12-7	Anthracene	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	1912-24-9	Atrazine	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	1912-24-9	Atrazine	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	1912-24-9	Atrazine	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	1912-24-9	Atrazine	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	1912-24-9	Atrazine	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	100-52-7	Benzaldehyde	10.4	µg/L	U	UJ
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	100-52-7	Benzaldehyde	11.1	µg/L	U	UJ
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	100-52-7	Benzaldehyde	10.6	µg/L	U	UJ
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	100-52-7	Benzaldehyde	10	µg/L	U	UJ
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	100-52-7	Benzaldehyde	10.9	µg/L	U	UJ
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	56-55-3	Benzo(a)anthracene	10.4	µg/L	U	

Table H-1. (continued).

Field Sample ID	Location	Lab Sample ID	Type	CAS-Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	56-55-3	Benzo(a)anthracene	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	56-55-3	Benzo(a)anthracene	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	56-55-3	Benzo(a)anthracene	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	56-55-3	Benzo(a)anthracene	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	50-32-8	Benzo(a)pyrene	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	50-32-8	Benzo(a)pyrene	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	50-32-8	Benzo(a)pyrene	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	50-32-8	Benzo(a)pyrene	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	50-32-8	Benzo(a)pyrene	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	205-99-2	Benzo(b)fluoranthene	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	205-99-2	Benzo(b)fluoranthene	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	205-99-2	Benzo(b)fluoranthene	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	205-99-2	Benzo(b)fluoranthene	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	205-99-2	Benzo(b)fluoranthene	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	191-24-2	Benzo(g,h,i)perylene	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	191-24-2	Benzo(g,h,i)perylene	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	191-24-2	Benzo(g,h,i)perylene	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	191-24-2	Benzo(g,h,i)perylene	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	191-24-2	Benzo(g,h,i)perylene	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	207-08-9	Benzo(k)fluoranthene	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	207-08-9	Benzo(k)fluoranthene	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	207-08-9	Benzo(k)fluoranthene	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	207-08-9	Benzo(k)fluoranthene	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	207-08-9	Benzo(k)fluoranthene	10.9	µg/L	U	

Table H-1. (continued).

Field Sample ID	Location	Lab Sample ID	Type	CAS-Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	111-91-1	bis-(2-chloroethoxy)methane	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	111-91-1	bis-(2-chloroethoxy)methane	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	111-91-1	bis-(2-chloroethoxy)methane	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	111-91-1	bis-(2-chloroethoxy)methane	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	111-91-1	bis-(2-chloroethoxy)methane	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	111-44-4	bis-(2-Chloroethyl)ether	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	111-44-4	bis-(2-Chloroethyl)ether	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	111-44-4	bis-(2-Chloroethyl)ether	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	111-44-4	bis-(2-Chloroethyl)ether	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	111-44-4	bis-(2-Chloroethyl)ether	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	117-81-7	bis-(2-ethylhexyl)phthalate	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	117-81-7	bis-(2-ethylhexyl)phthalate	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	117-81-7	bis-(2-ethylhexyl)phthalate	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	117-81-7	bis-(2-ethylhexyl)phthalate	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	117-81-7	bis-(2-ethylhexyl)phthalate	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	85-68-7	Butyl benzyl phthalate	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	85-68-7	Butyl benzyl phthalate	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	85-68-7	Butyl benzyl phthalate	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	85-68-7	Butyl benzyl phthalate	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	85-68-7	Butyl benzyl phthalate	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	105-60-2	Caprolactam	10.4	µg/L	U	UJ
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	105-60-2	Caprolactam	11.1	µg/L	U	UJ
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	105-60-2	Caprolactam	10.6	µg/L	U	UJ
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	105-60-2	Caprolactam	10	µg/L	U	UJ

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Table H-1. (continued).

Field Sample ID	Location	Lab Sample ID	Type	CAS-Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	105-60-2	Caprolactam	10.9	µg/L	U	UJ
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	86-74-8	Carbazole	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	86-74-8	Carbazole	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	86-74-8	Carbazole	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	86-74-8	Carbazole	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	86-74-8	Carbazole	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	218-01-9	Chrysene	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	218-01-9	Chrysene	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	218-01-9	Chrysene	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	218-01-9	Chrysene	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	218-01-9	Chrysene	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	53-70-3	Dibenzo(a,h)anthracene	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	53-70-3	Dibenzo(a,h)anthracene	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	53-70-3	Dibenzo(a,h)anthracene	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	53-70-3	Dibenzo(a,h)anthracene	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	53-70-3	Dibenzo(a,h)anthracene	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	132-64-9	Dibenzofuran	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	132-64-9	Dibenzofuran	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	132-64-9	Dibenzofuran	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	132-64-9	Dibenzofuran	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	132-64-9	Dibenzofuran	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	84-66-2	Diethyl Phthalate	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	84-66-2	Diethyl Phthalate	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	84-66-2	Diethyl Phthalate	10.6	µg/L	U	

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Table H-1. (continued).

Field Sample ID	Location	Lab Sample ID	Type	CAS-Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	84-66-2	Diethyl Phthalate	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	84-66-2	Diethyl Phthalate	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	131-11-3	Dimethyl phthalate	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	131-11-3	Dimethyl phthalate	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	131-11-3	Dimethyl phthalate	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	131-11-3	Dimethyl phthalate	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	131-11-3	Dimethyl phthalate	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	84-74-2	Di-n-butyl phthalate	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	84-74-2	Di-n-butyl phthalate	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	84-74-2	Di-n-butyl phthalate	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	84-74-2	Di-n-butyl phthalate	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	84-74-2	Di-n-butyl phthalate	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	117-84-0	Di-n-octyl phthalate	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	117-84-0	Di-n-octyl phthalate	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	117-84-0	Di-n-octyl phthalate	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	117-84-0	Di-n-octyl phthalate	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	117-84-0	Di-n-octyl phthalate	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	206-44-0	Fluoranthene	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	206-44-0	Fluoranthene	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	206-44-0	Fluoranthene	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	206-44-0	Fluoranthene	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	206-44-0	Fluoranthene	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	86-73-7	Fluorene	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	86-73-7	Fluorene	11.1	µg/L	U	

Table H-1. (continued).

Field Sample ID	Location	Lab Sample ID	Type	CAS-Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	86-73-7	Fluorene	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	86-73-7	Fluorene	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	86-73-7	Fluorene	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	118-74-1	Hexachlorobenzene	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	118-74-1	Hexachlorobenzene	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	118-74-1	Hexachlorobenzene	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	118-74-1	Hexachlorobenzene	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	118-74-1	Hexachlorobenzene	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	87-68-3	Hexachlorobutadiene	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	87-68-3	Hexachlorobutadiene	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	87-68-3	Hexachlorobutadiene	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	87-68-3	Hexachlorobutadiene	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	87-68-3	Hexachlorobutadiene	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	77-47-4	Hexachlorocyclopentadiene	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	77-47-4	Hexachlorocyclopentadiene	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	77-47-4	Hexachlorocyclopentadiene	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	77-47-4	Hexachlorocyclopentadiene	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	77-47-4	Hexachlorocyclopentadiene	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	67-72-1	Hexachloroethane	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	67-72-1	Hexachloroethane	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	67-72-1	Hexachloroethane	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	67-72-1	Hexachloroethane	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	67-72-1	Hexachloroethane	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	193-39-5	Indeno(1,2,3-cd)pyrene	10.4	µg/L	U	

Table H-1. (continued).

Field Sample ID	Location	Lab Sample ID	Type	CAS-Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	193-39-5	Indeno(1,2,3-cd)pyrene	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	193-39-5	Indeno(1,2,3-cd)pyrene	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	193-39-5	Indeno(1,2,3-cd)pyrene	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	193-39-5	Indeno(1,2,3-cd)pyrene	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	78-59-1	Isophorone	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	78-59-1	Isophorone	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	78-59-1	Isophorone	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	78-59-1	Isophorone	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	78-59-1	Isophorone	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	91-20-3	Naphthalene	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	91-20-3	Naphthalene	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	91-20-3	Naphthalene	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	91-20-3	Naphthalene	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	91-20-3	Naphthalene	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	98-95-3	Nitrobenzene	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	98-95-3	Nitrobenzene	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	98-95-3	Nitrobenzene	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	98-95-3	Nitrobenzene	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	98-95-3	Nitrobenzene	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	62-75-9	n-Nitrosodimethylamine	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	62-75-9	n-Nitrosodimethylamine	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	62-75-9	n-Nitrosodimethylamine	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	62-75-9	n-Nitrosodimethylamine	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	62-75-9	n-Nitrosodimethylamine	10.9	µg/L	U	

Table H-1. (continued).

Field Sample ID	Location	Lab Sample ID	Type	CAS-Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	621-64-7	n-Nitrosodi-n-propylamine	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	621-64-7	n-Nitrosodi-n-propylamine	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	621-64-7	n-Nitrosodi-n-propylamine	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	621-64-7	n-Nitrosodi-n-propylamine	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	621-64-7	n-Nitrosodi-n-propylamine	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	86-30-6	n-Nitrosodiphenylamine	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	86-30-6	n-Nitrosodiphenylamine	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	86-30-6	n-Nitrosodiphenylamine	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	86-30-6	n-Nitrosodiphenylamine	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	86-30-6	n-Nitrosodiphenylamine	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	87-86-5	Pentachlorophenol	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	87-86-5	Pentachlorophenol	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	87-86-5	Pentachlorophenol	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	87-86-5	Pentachlorophenol	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	87-86-5	Pentachlorophenol	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	85-01-8	Phenanthrene	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	85-01-8	Phenanthrene	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	85-01-8	Phenanthrene	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	85-01-8	Phenanthrene	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	85-01-8	Phenanthrene	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	108-95-2	Phenol	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	108-95-2	Phenol	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	108-95-2	Phenol	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	108-95-2	Phenol	10	µg/L	U	

Table H-1. (continued).

Field Sample ID	Location	Lab Sample ID	Type	CAS-Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	108-95-2	Phenol	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	129-00-0	Pyrene	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	129-00-0	Pyrene	11.1	µg/L	U	
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	129-00-0	Pyrene	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	129-00-0	Pyrene	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	129-00-0	Pyrene	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	110-86-1	Pyridine	10.4	µg/L	U	
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	110-86-1	Pyridine	1.7	µg/L	J	J
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	110-86-1	Pyridine	10.6	µg/L	U	
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	110-86-1	Pyridine	10	µg/L	U	
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	110-86-1	Pyridine	10.9	µg/L	U	
CP10100101SV	WM-186 TR-5	0311034-13A	ORG (SVOC)	126-73-8	Tributyl phosphate	13.3	µg/L		
CP10100201SV	WM-186 TR-6	0311034-14A	ORG (SVOC)	126-73-8	Tributyl phosphate	15.8	µg/L		
CP10100301SV	WM-186 TR-8	0311034-15A	ORG (SVOC)	126-73-8	Tributyl phosphate	14.1	µg/L		
CP10100401SV	WM-186 TR-8	0311034-16A	ORG (SVOC)	126-73-8	Tributyl phosphate	14.2	µg/L		
CP10100501SV	WM-186 TR-6	0311034-11A	ORG (SVOC)	126-73-8	Tributyl phosphate	15.4	µg/L		
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	71-55-6	1,1,1-Trichloroethane	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	71-55-6	1,1,1-Trichloroethane	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	71-55-6	1,1,1-Trichloroethane	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	71-55-6	1,1,1-Trichloroethane	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	71-55-6	1,1,1-Trichloroethane	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	71-55-6	1,1,1-Trichloroethane	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	79-34-5	1,1,2,2-Tetrachloroethane	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	79-34-5	1,1,2,2-Tetrachloroethane	10	µg/L	U	

Table H-1. (continued).

Field Sample ID	Location	Lab Sample ID	Type	CAS-Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	79-34-5	1,1,2,2-Tetrachloroethane	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	79-34-5	1,1,2,2-Tetrachloroethane	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	79-34-5	1,1,2,2-Tetrachloroethane	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	79-34-5	1,1,2,2-Tetrachloroethane	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	79-00-5	1,1,2-Trichloroethane	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	79-00-5	1,1,2-Trichloroethane	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	79-00-5	1,1,2-Trichloroethane	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	79-00-5	1,1,2-Trichloroethane	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	79-00-5	1,1,2-Trichloroethane	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	79-00-5	1,1,2-Trichloroethane	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	75-35-4	1,1-Dichloroethene	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	75-35-4	1,1-Dichloroethene	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	75-35-4	1,1-Dichloroethene	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	75-35-4	1,1-Dichloroethene	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	75-35-4	1,1-Dichloroethene	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	75-35-4	1,1-Dichloroethene	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	120-82-1	1,2,4-Trichlorobenzene	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	120-82-1	1,2,4-Trichlorobenzene	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	120-82-1	1,2,4-Trichlorobenzene	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	120-82-1	1,2,4-Trichlorobenzene	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	120-82-1	1,2,4-Trichlorobenzene	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	120-82-1	1,2,4-Trichlorobenzene	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	96-12-8	1,2-Dibromo-3-chloropropane	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	96-12-8	1,2-Dibromo-3-chloropropane	10	µg/L	U	

Table H-1. (continued).

Field Sample ID	Location	Lab Sample ID	Type	CAS-Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	96-12-8	1,2-Dibromo-3-chloropropane	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	96-12-8	1,2-Dibromo-3-chloropropane	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	96-12-8	1,2-Dibromo-3-chloropropane	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	96-12-8	1,2-Dibromo-3-chloropropane	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	106-93-4	1,2-Dibromoethane	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	106-93-4	1,2-Dibromoethane	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	106-93-4	1,2-Dibromoethane	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	106-93-4	1,2-Dibromoethane	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	106-93-4	1,2-Dibromoethane	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	106-93-4	1,2-Dibromoethane	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	95-50-1	1,2-Dichlorobenzene	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	95-50-1	1,2-Dichlorobenzene	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	95-50-1	1,2-Dichlorobenzene	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	95-50-1	1,2-Dichlorobenzene	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	95-50-1	1,2-Dichlorobenzene	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	95-50-1	1,2-Dichlorobenzene	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	78-87-5	1,2-Dichloropropane	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	78-87-5	1,2-Dichloropropane	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	78-87-5	1,2-Dichloropropane	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	78-87-5	1,2-Dichloropropane	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	78-87-5	1,2-Dichloropropane	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	78-87-5	1,2-Dichloropropane	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	541-73-1	1,3-Dichlorobenzene	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	541-73-1	1,3-Dichlorobenzene	10	µg/L	U	

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Table H-1. (continued).

Field Sample ID	Location	Lab Sample ID	Type	CAS-Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	541-73-1	1,3-Dichlorobenzene	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	541-73-1	1,3-Dichlorobenzene	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	541-73-1	1,3-Dichlorobenzene	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	541-73-1	1,3-Dichlorobenzene	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	106-46-7	1,4-Dichlorobenzene	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	106-46-7	1,4-Dichlorobenzene	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	106-46-7	1,4-Dichlorobenzene	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	106-46-7	1,4-Dichlorobenzene	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	106-46-7	1,4-Dichlorobenzene	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	106-46-7	1,4-Dichlorobenzene	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	78-93-3	2-Butanone	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	78-93-3	2-Butanone	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	78-93-3	2-Butanone	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	78-93-3	2-Butanone	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	78-93-3	2-Butanone	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	78-93-3	2-Butanone	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	591-78-6	2-Hexanone	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	591-78-6	2-Hexanone	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	591-78-6	2-Hexanone	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	591-78-6	2-Hexanone	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	591-78-6	2-Hexanone	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	591-78-6	2-Hexanone	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	108-10-1	4-Methyl-2-pentanone	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	108-10-1	4-Methyl-2-pentanone	10	µg/L	U	

Table H-1. (continued).

Field Sample ID	Location	Lab Sample ID	Type	CAS-Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	108-10-1	4-Methyl-2-pentanone	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	108-10-1	4-Methyl-2-pentanone	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	108-10-1	4-Methyl-2-pentanone	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	108-10-1	4-Methyl-2-pentanone	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	67-64-1	Acetone	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	67-64-1	Acetone	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	67-64-1	Acetone	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	67-64-1	Acetone	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	67-64-1	Acetone	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	67-64-1	Acetone	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	71-43-2	Benzene	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	71-43-2	Benzene	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	71-43-2	Benzene	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	71-43-2	Benzene	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	71-43-2	Benzene	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	71-43-2	Benzene	3	µg/L	J	J
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	75-27-4	Bromodichloromethane	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	75-27-4	Bromodichloromethane	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	75-27-4	Bromodichloromethane	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	75-27-4	Bromodichloromethane	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	75-27-4	Bromodichloromethane	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	75-27-4	Bromodichloromethane	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	75-25-2	Bromoform	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	75-25-2	Bromoform	10	µg/L	U	

Table H-1. (continued).

Field Sample ID	Location	Lab Sample ID	Type	CAS-Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	75-25-2	Bromoform	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	75-25-2	Bromoform	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	75-25-2	Bromoform	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	75-25-2	Bromoform	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	74-83-9	Bromomethane	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	74-83-9	Bromomethane	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	74-83-9	Bromomethane	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	74-83-9	Bromomethane	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	74-83-9	Bromomethane	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	74-83-9	Bromomethane	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	75-15-0	Carbon disulfide	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	75-15-0	Carbon disulfide	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	75-15-0	Carbon disulfide	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	75-15-0	Carbon disulfide	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	75-15-0	Carbon disulfide	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	75-15-0	Carbon disulfide	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	56-23-5	Carbon tetrachloride	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	56-23-5	Carbon tetrachloride	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	56-23-5	Carbon tetrachloride	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	56-23-5	Carbon tetrachloride	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	56-23-5	Carbon tetrachloride	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	56-23-5	Carbon tetrachloride	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	108-90-7	Chlorobenzene	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	108-90-7	Chlorobenzene	10	µg/L	U	

Table H-1. (continued).

Field Sample ID	Location	Lab Sample ID	Type	CAS-Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	108-90-7	Chlorobenzene	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	108-90-7	Chlorobenzene	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	108-90-7	Chlorobenzene	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	108-90-7	Chlorobenzene	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	75-00-3	Chloroethane	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	75-00-3	Chloroethane	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	75-00-3	Chloroethane	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	75-00-3	Chloroethane	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	75-00-3	Chloroethane	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	75-00-3	Chloroethane	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	67-66-3	Chloroform	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	67-66-3	Chloroform	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	67-66-3	Chloroform	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	67-66-3	Chloroform	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	67-66-3	Chloroform	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	67-66-3	Chloroform	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	74-87-3	Chloromethane	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	74-87-3	Chloromethane	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	74-87-3	Chloromethane	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	74-87-3	Chloromethane	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	74-87-3	Chloromethane	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	74-87-3	Chloromethane	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	156-59-2	cis-1,2-Dichloroethene	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	156-59-2	cis-1,2-Dichloroethene	10	µg/L	U	

Table H-1. (continued).

Field Sample ID	Location	Lab Sample ID	Type	CAS-Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	156-59-2	cis-1,2-Dichloroethene	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	156-59-2	cis-1,2-Dichloroethene	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	156-59-2	cis-1,2-Dichloroethene	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	156-59-2	cis-1,2-Dichloroethene	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	10061-01-5	cis-1,3-Dichloropropene	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	10061-01-5	cis-1,3-Dichloropropene	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	10061-01-5	cis-1,3-Dichloropropene	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	10061-01-5	cis-1,3-Dichloropropene	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	10061-01-5	cis-1,3-Dichloropropene	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	10061-01-5	cis-1,3-Dichloropropene	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	110-82-7	Cyclohexane	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	110-82-7	Cyclohexane	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	110-82-7	Cyclohexane	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	110-82-7	Cyclohexane	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	110-82-7	Cyclohexane	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	110-82-7	Cyclohexane	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	108-94-1	Cyclohexanone	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	108-94-1	Cyclohexanone	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	108-94-1	Cyclohexanone	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	108-94-1	Cyclohexanone	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	108-94-1	Cyclohexanone	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	108-94-1	Cyclohexanone	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	124-48-1	Dibromochloromethane	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	124-48-1	Dibromochloromethane	10	µg/L	U	

Table H-1. (continued).

Field Sample ID	Location	Lab Sample ID	Type	CAS-Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	124-48-1	Dibromochloromethane	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	124-48-1	Dibromochloromethane	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	124-48-1	Dibromochloromethane	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	124-48-1	Dibromochloromethane	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	75-71-8	Dichlorodifluoromethane	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	75-71-8	Dichlorodifluoromethane	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	75-71-8	Dichlorodifluoromethane	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	75-71-8	Dichlorodifluoromethane	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	75-71-8	Dichlorodifluoromethane	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	75-71-8	Dichlorodifluoromethane	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	141-78-6	Ethyl acetate	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	141-78-6	Ethyl acetate	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	141-78-6	Ethyl acetate	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	141-78-6	Ethyl acetate	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	141-78-6	Ethyl acetate	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	141-78-6	Ethyl acetate	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	100-41-4	Ethylbenzene	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	100-41-4	Ethylbenzene	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	100-41-4	Ethylbenzene	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	100-41-4	Ethylbenzene	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	100-41-4	Ethylbenzene	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	100-41-4	Ethylbenzene	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	76-13-1	Freon 113	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	76-13-1	Freon 113	10	µg/L	U	

Table H-1. (continued).

Field Sample ID	Location	Lab Sample ID	Type	CAS-Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	76-13-1	Freon 113	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	76-13-1	Freon 113	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	76-13-1	Freon 113	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	76-13-1	Freon 113	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	98-82-8	Isopropylbenzene	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	98-82-8	Isopropylbenzene	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	98-82-8	Isopropylbenzene	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	98-82-8	Isopropylbenzene	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	98-82-8	Isopropylbenzene	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	98-82-8	Isopropylbenzene	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	13-302-07	m,p-Xylenes	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	13-302-07	m,p-Xylenes	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	13-302-07	m,p-Xylenes	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	13-302-07	m,p-Xylenes	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	13-302-07	m,p-Xylenes	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	13-302-07	m,p-Xylenes	10	µg/L	U	
CP10100101MT	WM-186 TR-5	0311034-02A	ORG (VOC)	67-56-1	Methanol	20	MG/L	U	
CP10100201MT	WM-186 TR-6	0311034-04A	ORG (VOC)	67-56-1	Methanol	20	MG/L	U	
CP10100301MT	WM-186 TR-8	0311034-06A	ORG (VOC)	67-56-1	Methanol	20	MG/L	U	
CP10100401MT	WM-186 TR-8	0311034-08A	ORG (VOC)	67-56-1	Methanol	20	MG/L	U	
CP10100501MT	WM-186 TR-6	0311034-10A	ORG (VOC)	67-56-1	Methanol	20	MG/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	79-20-9	Methyl acetate	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	79-20-9	Methyl acetate	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	79-20-9	Methyl acetate	10	µg/L	U	

Table H-1. (continued).

Field Sample ID	Location	Lab Sample ID	Type	CAS-Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	79-20-9	Methyl acetate	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	79-20-9	Methyl acetate	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	79-20-9	Methyl acetate	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	108-87-2	Methyl cyclohexane	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	108-87-2	Methyl cyclohexane	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	108-87-2	Methyl cyclohexane	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	108-87-2	Methyl cyclohexane	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	108-87-2	Methyl cyclohexane	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	108-87-2	Methyl cyclohexane	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	75-09-2	Methylene Chloride	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	75-09-2	Methylene Chloride	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	75-09-2	Methylene Chloride	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	75-09-2	Methylene Chloride	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	75-09-2	Methylene Chloride	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	75-09-2	Methylene Chloride	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	95-47-6	o-Xylene	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	95-47-6	o-Xylene	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	95-47-6	o-Xylene	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	95-47-6	o-Xylene	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	95-47-6	o-Xylene	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	95-47-6	o-Xylene	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	100-42-5	Styrene	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	100-42-5	Styrene	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	100-42-5	Styrene	10	µg/L	U	

Table H-1. (continued).

Field Sample ID	Location	Lab Sample ID	Type	CAS-Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	100-42-5	Styrene	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	100-42-5	Styrene	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	100-42-5	Styrene	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	127-18-4	Tetrachloroethene	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	127-18-4	Tetrachloroethene	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	127-18-4	Tetrachloroethene	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	127-18-4	Tetrachloroethene	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	127-18-4	Tetrachloroethene	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	127-18-4	Tetrachloroethene	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	108-88-3	Toluene	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	108-88-3	Toluene	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	108-88-3	Toluene	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	108-88-3	Toluene	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	108-88-3	Toluene	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	108-88-3	Toluene	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	156-60-5	trans-1,2-Dichloroethene	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	156-60-5	trans-1,2-Dichloroethene	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	156-60-5	trans-1,2-Dichloroethene	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	156-60-5	trans-1,2-Dichloroethene	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	156-60-5	trans-1,2-Dichloroethene	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	156-60-5	trans-1,2-Dichloroethene	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	10061-02-6	trans-1,3-Dichloropropene	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	10061-02-6	trans-1,3-Dichloropropene	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	10061-02-6	trans-1,3-Dichloropropene	10	µg/L	U	

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Table H-1. (continued).

Field Sample ID	Location	Lab Sample ID	Type	CAS-Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	10061-02-6	trans-1,3-Dichloropropene	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	10061-02-6	trans-1,3-Dichloropropene	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	10061-02-6	trans-1,3-Dichloropropene	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	79-01-6	Trichloroethene	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	79-01-6	Trichloroethene	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	79-01-6	Trichloroethene	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	79-01-6	Trichloroethene	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	79-01-6	Trichloroethene	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	79-01-6	Trichloroethene	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	75-69-4	Trichlorofluoromethane	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	75-69-4	Trichlorofluoromethane	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	75-69-4	Trichlorofluoromethane	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	75-69-4	Trichlorofluoromethane	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	75-69-4	Trichlorofluoromethane	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	75-69-4	Trichlorofluoromethane	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	75-01-4	Vinyl Chloride	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	75-01-4	Vinyl Chloride	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	75-01-4	Vinyl Chloride	10	µg/L	U	
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	75-01-4	Vinyl Chloride	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	75-01-4	Vinyl Chloride	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	75-01-4	Vinyl Chloride	10	µg/L	U	
CP10100101VG	WM-186 TR-5	0311034-01A	ORG (VOC)	1330-20-7	Xylene (Total)	10	µg/L	U	
CP10100201VG	WM-186 TR-6	0311034-03A	ORG (VOC)	1330-20-7	Xylene (Total)	10	µg/L	U	
CP10100301VG	WM-186 TR-8	0311034-05A	ORG (VOC)	1330-20-7	Xylene (Total)	10	µg/L	U	

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Table H-1. (continued).

Field Sample ID	Location	Lab Sample ID	Type	CAS-Number	Compound	Result	Units	Lab Flag ^a	Validator Flag ^b
CP10100401VG	WM-186 TR-8	0311034-07A	ORG (VOC)	1330-20-7	Xylene (Total)	10	µg/L	U	
CP10100501VG	WM-186 TR-6	0311034-09A	ORG (VOC)	1330-20-7	Xylene (Total)	10	µg/L	U	
CP10100901VG	Trip Blank	0311034-12A	ORG (VOC)	1330-20-7	Xylene (Total)	10	µg/L	U	

a. Laboratory flags:

J=Analyte was detected but was less than the quantitation limit.

U=Analyte was not detected. Quantitation limit is reported.

b. Validator flags:

J=Estimated

U=Undetected.

Appendix I

Reported Results for Radionuclides

Table I-1. Reported results for radionuclides.

Field Sample ID	Location	Lab Sample ID	Analysis	Compound	Result	Units	Uncertainty	Validator Flag ^a	MDA ^b	0.5*MDA
CP10100101X3	WM-186 TR-5	3CA34	Gamma Emitters	^{108m} Ag	5.29E-02	pCi/L	1.52E+02	U	5.96E+02	2.98E+02
CP10100201X3	WM-186 TR-6	3CA22	Gamma Emitters	^{108m} Ag	1.98E+02	pCi/L	3.95E+02	U	8.25E+02	4.13E+02
CP10100301X3	WM-186 TR-8	3CA28	Gamma Emitters	^{108m} Ag	-5.29E-02	pCi/L	1.92E+02	U	7.53E+02	3.77E+02
CP10100401X3	WM-186 TR-8	3CA40	Gamma Emitters	^{108m} Ag	5.29E-02	pCi/L	2.03E+02	U	7.96E+02	3.98E+02
CP10100501X3	WM-186 TR-6	3CA46	Gamma Emitters	^{108m} Ag	5.29E-02	pCi/L	2.12E+02	U	8.30E+02	4.15E+02
CP10100101X3	WM-186 TR-5	3CA34	Gamma Emitters	^{110m} Ag	-2.05E+00	pCi/L	2.76E+01	U	1.16E+02	5.80E+01
CP10100201X3	WM-186 TR-6	3CA22	Gamma Emitters	^{110m} Ag	4.09E+01	pCi/L	8.75E+01	U	1.98E+02	9.90E+01
CP10100301X3	WM-186 TR-8	3CA28	Gamma Emitters	^{110m} Ag	-8.63E+01	pCi/L	1.28E+02	U	1.65E+02	8.25E+01
CP10100401X3	WM-186 TR-8	3CA40	Gamma Emitters	^{110m} Ag	-6.27E+01	pCi/L	1.09E+02	U	1.88E+02	9.40E+01
CP10100501X3	WM-186 TR-6	3CA46	Gamma Emitters	^{110m} Ag	2.94E+01	pCi/L	7.76E+01	U	2.08E+02	1.04E+02
CP10100101X3	WM-186 TR-5	3CA34	Alpha Emitters	²⁴¹ Am	7.85E+01	pCi/L	1.14E+02	U	1.20E+02	6.00E+01
CP10100201X3	WM-186 TR-6	3CA22	Alpha Emitters	²⁴¹ Am	1.28E+03	pCi/L	3.00E+02		1.28E+02	6.40E+01
CP10100301X3	WM-186 TR-8	3CA28	Alpha Emitters	²⁴¹ Am	4.75E+02	pCi/L	1.34E+02		2.11E+01	1.06E+01
CP10100401X3	WM-186 TR-8	3CA40	Alpha Emitters	²⁴¹ Am	9.13E+02	pCi/L	2.27E+02		1.15E+02	5.75E+01
CP10100501X3	WM-186 TR-6	3CA46	Alpha Emitters	²⁴¹ Am	8.13E+02	pCi/L	2.10E+02		1.34E+02	6.70E+01
CP10100101X3	WM-186 TR-5	3CA34	Gamma Emitters	²⁴¹ Am	8.72E+02	pCi/L	1.58E+03	U	2.75E+03	1.38E+03
CP10100201X3	WM-186 TR-6	3CA22	Gamma Emitters	²⁴¹ Am	8.32E+02	pCi/L	1.80E+03	U	3.85E+03	1.93E+03
CP10100301X3	WM-186 TR-8	3CA28	Gamma Emitters	²⁴¹ Am	-1.82E+03	pCi/L	2.75E+03	U	3.47E+03	1.74E+03
CP10100401X3	WM-186 TR-8	3CA40	Gamma Emitters	²⁴¹ Am	1.98E+03	pCi/L	2.95E+03	U	3.61E+03	1.81E+03
CP10100501X3	WM-186 TR-6	3CA46	Gamma Emitters	²⁴¹ Am	3.19E+03	pCi/L	4.26E+03	U	3.75E+03	1.88E+03
CP10100101X5	WM-186 TR-5	01S8-01-A	Specific Analysis	¹⁴ C	1.35E+00	pCi/L	4.68E+00	U	1.56E+01	7.80E+00
CP10100201X5	WM-186 TR-6	01S8-02-A	Specific Analysis	¹⁴ C	4.67E+00	pCi/L	4.73E+00	U	1.56E+01	7.80E+00
CP10100301X5	WM-186 TR-8	01S8-03-A	Specific Analysis	¹⁴ C	-1.58E+00	pCi/L	4.68E+00	U	1.56E+01	7.80E+00
CP10100401X5	WM-186 TR-8	01S8-04-A	Specific Analysis	¹⁴ C	3.09E+00	pCi/L	4.72E+00	U	1.56E+01	7.80E+00
CP10100501X5	WM-186 TR-6	01S8-05-A	Specific Analysis	¹⁴ C	-1.43E+00	pCi/L	4.68E+00	U	1.56E+01	7.80E+00
CP10100101X3	WM-186 TR-5	3CA34	Gamma Emitters	¹⁴⁴ Ce	-3.99E+02	pCi/L	1.16E+03	U	3.16E+03	1.58E+03
CP10100201X3	WM-186 TR-6	3CA22	Gamma Emitters	¹⁴⁴ Ce	2.15E+02	pCi/L	1.24E+03	U	4.33E+03	2.17E+03
CP10100301X3	WM-186 TR-8	3CA28	Gamma Emitters	¹⁴⁴ Ce	-7.39E+02	pCi/L	1.72E+03	U	3.98E+03	1.99E+03
CP10100401X3	WM-186 TR-8	3CA40	Gamma Emitters	¹⁴⁴ Ce	1.13E+03	pCi/L	2.16E+03	U	4.08E+03	2.04E+03

Table I-1. (continued).

Field Sample ID	Location	Lab Sample ID	Analysis	Compo und	Result	Units	Uncertainty	Validator Flag ^a	MDA ^b	0.5*MDA
CP10100501X3	WM-186 TR-6	3CA46	Gamma Emitters	¹⁴⁴ Ce	3.95E+02	pCi/L	1.41E+03	U	4.22E+03	2.11E+03
CP10100101X3	WM-186 TR-5	3CA34	Alpha Emitters	²⁴² Cm	-2.87E+00	pCi/L	4.79E+00	U	4.05E+01	2.03E+01
CP10100201X3	WM-186 TR-6	3CA22	Alpha Emitters	²⁴² Cm	-2.88E+00	pCi/L	4.81E+00	U	4.07E+01	2.04E+01
CP10100301X3	WM-186 TR-8	3CA28	Alpha Emitters	²⁴² Cm	0.00E+00	pCi/L	0.00E+00	U	2.14E+01	1.07E+01
CP10100401X3	WM-186 TR-8	3CA40	Alpha Emitters	²⁴² Cm	1.13E+01	pCi/L	1.78E+01	U	3.99E+01	2.00E+01
CP10100501X3	WM-186 TR-6	3CA46	Alpha Emitters	²⁴² Cm	-3.00E+00	pCi/L	5.02E+00	U	4.24E+01	2.12E+01
CP10100101X3	WM-186 TR-5	3CA34	Alpha Emitters	²⁴⁴ Cm	0.00E+00	pCi/L	0.00E+00	U	1.94E+01	9.70E+00
CP10100201X3	WM-186 TR-6	3CA22	Alpha Emitters	²⁴⁴ Cm	2.30E+01	pCi/L	3.49E+01	U	4.94E+01	2.47E+01
CP10100301X3	WM-186 TR-8	3CA28	Alpha Emitters	²⁴⁴ Cm	0.00E+00	pCi/L	0.00E+00	U	2.14E+01	1.07E+01
CP10100401X3	WM-186 TR-8	3CA40	Alpha Emitters	²⁴⁴ Cm	3.39E+01	pCi/L	2.12E+01	U	3.38E+01	1.69E+01
CP10100501X3	WM-186 TR-6	3CA46	Alpha Emitters	²⁴⁴ Cm	2.70E+01	pCi/L	3.93E+01	U	4.24E+01	2.12E+01
CP10100101X3	WM-186 TR-5	3CA34	Gamma Emitters	⁵⁸ Co	3.61E+01	pCi/L	6.05E+01	U	9.77E+01	4.89E+01
CP10100201X3	WM-186 TR-6	3CA22	Gamma Emitters	⁵⁸ Co	5.73E+01	pCi/L	9.80E+01	U	1.64E+02	8.20E+01
CP10100301X3	WM-186 TR-8	3CA28	Gamma Emitters	⁵⁸ Co	8.76E+01	pCi/L	1.26E+02	U	1.44E+02	7.20E+01
CP10100401X3	WM-186 TR-8	3CA40	Gamma Emitters	⁵⁸ Co	3.12E+01	pCi/L	7.08E+01	U	1.67E+02	8.35E+01
CP10100501X3	WM-186 TR-6	3CA46	Gamma Emitters	⁵⁸ Co	-6.55E+00	pCi/L	4.69E+01	U	1.76E+02	8.80E+01
CP10100101X3	WM-186 TR-5	3CA34	Gamma Emitters	⁶⁰ Co	2.20E+03	pCi/L	1.51E+02		3.40E+01	1.70E+01
CP10100201X3	WM-186 TR-6	3CA22	Gamma Emitters	⁶⁰ Co	4.79E+03	pCi/L	3.10E+02		4.48E+01	2.24E+01
CP10100301X3	WM-186 TR-8	3CA28	Gamma Emitters	⁶⁰ Co	3.07E+03	pCi/L	2.18E+02		4.22E+01	2.11E+01
CP10100401X3	WM-186 TR-8	3CA40	Gamma Emitters	⁶⁰ Co	2.96E+03	pCi/L	2.03E+02		4.75E+01	2.38E+01
CP10100501X3	WM-186 TR-6	3CA46	Gamma Emitters	⁶⁰ Co	3.11E+03	pCi/L	2.11E+02		5.40E+01	2.70E+01
CP10100101X3	WM-186 TR-5	3CA34	Gamma Emitters	¹³⁴ Cs	1.31E+03	pCi/L	1.07E+02		3.74E+02	1.87E+02
CP10100201X3	WM-186 TR-6	3CA22	Gamma Emitters	¹³⁴ Cs	2.46E+03	pCi/L	2.74E+02		5.14E+02	2.57E+02
CP10100301X3	WM-186 TR-8	3CA28	Gamma Emitters	¹³⁴ Cs	1.93E+03	pCi/L	1.50E+02		4.48E+02	2.24E+02
CP10100401X3	WM-186 TR-8	3CA40	Gamma Emitters	¹³⁴ Cs	2.20E+03	pCi/L	1.65E+02		4.98E+02	2.49E+02
CP10100501X3	WM-186 TR-6	3CA46	Gamma Emitters	¹³⁴ Cs	2.45E+03	pCi/L	2.25E+02		4.95E+02	2.48E+02
CP10100101X3	WM-186 TR-5	3CA34	Gamma Emitters	¹³⁷ Cs	1.70E+06	pCi/L	9.72E+04		3.15E+02	1.58E+02
CP10100201X3	WM-186 TR-6	3CA22	Gamma Emitters	¹³⁷ Cs	3.22E+06	pCi/L	1.81E+05		4.52E+02	2.26E+02
CP10100301X3	WM-186 TR-8	3CA28	Gamma Emitters	¹³⁷ Cs	2.71E+06	pCi/L	1.52E+05		4.02E+02	2.01E+02
CP10100401X3	WM-186 TR-8	3CA40	Gamma Emitters	¹³⁷ Cs	3.11E+06	pCi/L	1.69E+05		4.16E+02	2.08E+02

Table I-1. (continued).

Field Sample ID	Location	Lab Sample ID	Analysis	Compo und	Result	Units	Uncertainty	Validator Flag ^a	MDA ^b	0.5*MDA
CP10100501X3	WM-186 TR-6	3CA46	Gamma Emitters	¹³⁷ Cs	3.37E+06	pCi/L	1.90E+05		4.99E+02	2.50E+02
CP10100101X3	WM-186 TR-5	3CA34	Gamma Emitters	¹⁵² Eu	-7.34E+02	pCi/L	1.14E+03	U	1.59E+03	7.95E+02
CP10100201X3	WM-186 TR-6	3CA22	Gamma Emitters	¹⁵² Eu	-7.93E+02	pCi/L	1.35E+03	U	2.20E+03	1.10E+03
CP10100301X3	WM-186 TR-8	3CA28	Gamma Emitters	¹⁵² Eu	-2.49E+02	pCi/L	7.29E+02	U	2.01E+03	1.01E+03
CP10100401X3	WM-186 TR-8	3CA40	Gamma Emitters	¹⁵² Eu	3.18E+01	pCi/L	5.21E+02	U	2.10E+03	1.05E+03
CP10100501X3	WM-186 TR-6	3CA46	Gamma Emitters	¹⁵² Eu	-3.87E+02	pCi/L	9.14E+02	U	2.18E+03	1.09E+03
CP10100101X3	WM-186 TR-5	3CA34	Gamma Emitters	¹⁵⁴ Eu	1.51E+03	pCi/L	1.56E+02		1.51E+02	7.55E+01
CP10100201X3	WM-186 TR-6	3CA22	Gamma Emitters	¹⁵⁴ Eu	5.37E+03	pCi/L	4.78E+02		2.37E+02	1.19E+02
CP10100301X3	WM-186 TR-8	3CA28	Gamma Emitters	¹⁵⁴ Eu	2.65E+03	pCi/L	2.34E+02		1.98E+02	9.90E+01
CP10100401X3	WM-186 TR-8	3CA40	Gamma Emitters	¹⁵⁴ Eu	1.08E+04	pCi/L	9.67E+02		2.23E+02	1.12E+02
CP10100501X3	WM-186 TR-6	3CA46	Gamma Emitters	¹⁵⁴ Eu	1.26E+04	pCi/L	1.01E+03		2.59E+02	1.30E+02
CP10100101X3	WM-186 TR-5	3CA34	Gamma Emitters	¹⁵⁵ Eu	1.55E+02	pCi/L	5.62E+02	U	1.68E+03	8.40E+02
CP10100201X3	WM-186 TR-6	3CA22	Gamma Emitters	¹⁵⁵ Eu	1.42E-01	pCi/L	5.95E+02	U	2.35E+03	1.18E+03
CP10100301X3	WM-186 TR-8	3CA28	Gamma Emitters	¹⁵⁵ Eu	-6.49E+02	pCi/L	1.21E+03	U	2.13E+03	1.07E+03
CP10100401X3	WM-186 TR-8	3CA40	Gamma Emitters	¹⁵⁵ Eu	1.42E+03	pCi/L	2.06E+03	U	2.18E+03	1.09E+03
CP10100501X3	WM-186 TR-6	3CA46	Gamma Emitters	¹⁵⁵ Eu	1.88E+03	pCi/L	2.57E+03	U	2.26E+03	1.13E+03
CP10100101R8	WM-186 TR-5	3CA35	Specific Analysis	³ H	1.94E+03	pCi/L	4.22E+01	J	5.20E+02	2.60E+02
CP10100201R8	WM-186 TR-6	3CA23	Specific Analysis	³ H	2.54E+03	pCi/L	4.40E+01	J	5.20E+02	2.60E+02
CP10100301R8	WM-186 TR-8	3CA29	Specific Analysis	³ H	1.86E+03	pCi/L	4.14E+01	J	5.16E+02	2.58E+02
CP10100401R8	WM-186 TR-8	3CA41	Specific Analysis	³ H	1.52E+03	pCi/L	4.07E+01	J	5.19E+02	2.60E+02
CP10100501R8	WM-186 TR-6	3CA47	Specific Analysis	³ H	1.86E+03	pCi/L	4.22E+01	J	5.21E+02	2.61E+02
CP10100101X5	WM-186 TR-5	01S8-01-A	Specific Analysis	¹²⁹ I	2.74E+01	pCi/L	2.29E+00		3.66E+00	1.83E+00
CP10100201X5	WM-186 TR-6	01S8-02-A	Specific Analysis	¹²⁹ I	1.44E+01	pCi/L	1.38E+00		2.65E+00	1.33E+00
CP10100301X5	WM-186 TR-8	01S8-03-A	Specific Analysis	¹²⁹ I	1.76E+01	pCi/L	1.96E+00		4.33E+00	2.17E+00
CP10100401X5	WM-186 TR-8	01S8-04-A	Specific Analysis	¹²⁹ I	2.76E+01	pCi/L	2.51E+00		4.50E+00	2.25E+00
CP10100501X5	WM-186 TR-6	01S8-05-A	Specific Analysis	¹²⁹ I	2.72E+01	pCi/L	2.27E+00		3.65E+00	1.83E+00
CP10100101X3	WM-186 TR-5	3CA34	Gamma Emitters	⁵⁴ Mn	3.36E+01	pCi/L	5.57E+01	U	8.88E+01	4.44E+01
CP10100201X3	WM-186 TR-6	3CA22	Gamma Emitters	⁵⁴ Mn	3.30E+01	pCi/L	7.03E+01	U	1.57E+02	7.85E+01
CP10100301X3	WM-186 TR-8	3CA28	Gamma Emitters	⁵⁴ Mn	-4.72E+01	pCi/L	7.92E+01	U	1.29E+02	6.45E+01
CP10100401X3	WM-186 TR-8	3CA40	Gamma Emitters	⁵⁴ Mn	8.49E+01	pCi/L	1.25E+02	U	1.53E+02	7.65E+01

Table I-1. (continued).

Field Sample ID	Location	Lab Sample ID	Analysis	Compo und	Result	Units	Uncertainty	Validator Flag ^a	MDA ^b	0.5*MDA
CP10100501X3	WM-186 TR-6	3CA46	Gamma Emitters	⁵⁴ Mn	-3.36E+01	pCi/L	7.21E+01	U	1.62E+02	8.10E+01
CP10100101X3	WM-186 TR-5	3CA34	Gamma Emitters	⁹⁴ Nb	2.98E+02	pCi/L	2.56E+01		1.09E+02	5.45E+01
CP10100201X3	WM-186 TR-6	3CA22	Gamma Emitters	⁹⁴ Nb	3.09E+02	pCi/L	1.09E+02	J	2.17E+02	1.09E+02
CP10100301X3	WM-186 TR-8	3CA28	Gamma Emitters	⁹⁴ Nb	2.67E+02	pCi/L	2.62E+01		1.45E+02	7.25E+01
CP10100401X3	WM-186 TR-8	3CA40	Gamma Emitters	⁹⁴ Nb	5.54E+03	pCi/L	3.93E+02		1.76E+02	8.80E+01
CP10100501X3	WM-186 TR-6	3CA46	Gamma Emitters	⁹⁴ Nb	7.00E+03	pCi/L	5.25E+02		1.90E+02	9.50E+01
CP10100101X3	WM-186 TR-5	3CA34	Gamma Emitters	⁹⁵ Nb	-1.50E+01	pCi/L	4.00E+01	U	1.06E+02	5.30E+01
CP10100201X3	WM-186 TR-6	3CA22	Gamma Emitters	⁹⁵ Nb	1.40E+01	pCi/L	5.47E+01	U	1.73E+02	8.65E+01
CP10100301X3	WM-186 TR-8	3CA28	Gamma Emitters	⁹⁵ Nb	-1.74E+01	pCi/L	5.46E+01	U	1.58E+02	7.90E+01
CP10100401X3	WM-186 TR-8	3CA40	Gamma Emitters	⁹⁵ Nb	-3.18E+01	pCi/L	7.59E+01	U	1.84E+02	9.20E+01
CP10100501X3	WM-186 TR-6	3CA46	Gamma Emitters	⁹⁵ Nb	-2.83E+01	pCi/L	7.56E+01	U	1.98E+02	9.90E+01
CP10100101X4	WM-186 TR-5	0311034-17	Specific Analysis	⁶³ Ni	4.04E+03	PCI/L	3.40E+02	J	4.96E+01	2.48E+01
CP10100201X4	WM-186 TR-6	0311034-18	Specific Analysis	⁶³ Ni	7.27E+03	PCI/L	6.07E+02	J	4.75E+01	2.38E+01
CP10100301X4	WM-186 TR-8	0311034-19	Specific Analysis	⁶³ Ni	4.60E+03	PCI/L	3.86E+02	J	4.85E+01	2.43E+01
CP10100401X4	WM-186 TR-8	0311034-25	Specific Analysis	⁶³ Ni	3.90E+03	PCI/L	3.28E+02	J	4.87E+01	2.44E+01
CP10100501X4	WM-186 TR-6	0311034-26	Specific Analysis	⁶³ Ni	3.70E+03	PCI/L	3.11E+02	J	4.83E+01	2.42E+01
CP10100101X3	WM-186 TR-5	3CA34	Alpha Emitters	²³⁷ Np	1.81E+01	pCi/L	9.15E+00	U	9.80E+00	4.90E+00
CP10100201X3	WM-186 TR-6	3CA22	Alpha Emitters	²³⁷ Np	8.15E+01	pCi/L	1.85E+01		9.60E+00	4.80E+00
CP10100301X3	WM-186 TR-8	3CA28	Alpha Emitters	²³⁷ Np	2.98E+01	pCi/L	1.23E+01	J	1.01E+01	5.05E+00
CP10100401X3	WM-186 TR-8	3CA40	Alpha Emitters	²³⁷ Np	3.01E+01	pCi/L	1.24E+01	J	1.02E+01	5.10E+00
CP10100501X3	WM-186 TR-6	3CA46	Alpha Emitters	²³⁷ Np	5.10E+01	pCi/L	1.66E+01		9.88E+00	4.94E+00
CP10100101X4	WM-186 TR-5	0311034-17	Specific Analysis	²⁴¹ Pu	6.44E+03	PCI/L	1.82E+02	J	2.40E+02	1.20E+02
CP10100201X4	WM-186 TR-6	0311034-18	Specific Analysis	²⁴¹ Pu	8.82E+03	PCI/L	2.49E+02	J	2.91E+02	1.46E+02
CP10100301X4	WM-186 TR-8	0311034-19	Specific Analysis	²⁴¹ Pu	6.69E+03	PCI/L	1.90E+02	J	3.12E+02	1.56E+02
CP10100401X4	WM-186 TR-8	0311034-25	Specific Analysis	²⁴¹ Pu	5.57E+04	PCI/L	1.62E+03	J	1.35E+03	6.75E+02
CP10100501X4	WM-186 TR-6	0311034-26	Specific Analysis	²⁴¹ Pu	6.23E+04	PCI/L	1.81E+03	J	1.37E+03	6.85E+02
CP10100101X3	WM-186 TR-5	3CA34	Alpha Emitters	²³⁸ Pu	9.14E+03	pCi/L	1.75E+03		1.88E+02	9.40E+01
CP10100201X3	WM-186 TR-6	3CA22	Alpha Emitters	²³⁸ Pu	1.25E+04	pCi/L	2.31E+03		1.64E+02	8.20E+01
CP10100301X3	WM-186 TR-8	3CA28	Alpha Emitters	²³⁸ Pu	4.11E+03	pCi/L	8.79E+02		1.96E+02	9.80E+01
CP10100401X3	WM-186 TR-8	3CA40	Alpha Emitters	²³⁸ Pu	9.93E+03	pCi/L	1.87E+03		1.43E+02	7.15E+01

Table I-1. (continued).

Field Sample ID	Location	Lab Sample ID	Analysis	Compo und	Result	Units	Uncertainty	Validator Flag ^a	MDA ^b	0.5*MDA
CP10100501X3	WM-186 TR-6	3CA46	Alpha Emitters	²³⁸ Pu	9.40E+04	pCi/L	1.60E+04		1.51E+02	7.55E+01
CP10100101X3	WM-186 TR-5	3CA34	Alpha Emitters	^{239/240} Pu	1.11E+03	pCi/L	2.82E+02		1.59E+02	7.95E+01
CP10100201X3	WM-186 TR-6	3CA22	Alpha Emitters	^{239/240} Pu	1.76E+03	pCi/L	3.99E+02		9.04E+01	4.52E+01
CP10100301X3	WM-186 TR-8	3CA28	Alpha Emitters	^{239/240} Pu	7.67E+02	pCi/L	2.15E+02		1.12E+02	5.60E+01
CP10100401X3	WM-186 TR-8	3CA40	Alpha Emitters	^{239/240} Pu	1.26E+03	pCi/L	3.02E+02		7.23E+01	3.62E+01
CP10100501X3	WM-186 TR-6	3CA46	Alpha Emitters	^{239/240} Pu	1.42E+04	pCi/L	2.62E+03		8.32E+01	4.16E+01
CP10100101X3	WM-186 TR-5	3CA34	Gamma Emitters	²²⁶ Ra	7.40E+04 ^c	pCi/L	1.18E+04		1.21E+04	6.05E+03
CP10100201X3	WM-186 TR-6	3CA22	Gamma Emitters	²²⁶ Ra	1.64E+04	pCi/L	3.82E+04	U	1.72E+04	8.60E+03
CP10100301X3	WM-186 TR-8	3CA28	Gamma Emitters	²²⁶ Ra	1.77E+05 ^c	pCi/L	2.82E+04		1.86E+04	9.30E+03
CP10100401X3	WM-186 TR-8	3CA40	Gamma Emitters	²²⁶ Ra	2.21E+05 ^c	pCi/L	3.46E+04		1.93E+04	9.65E+03
CP10100501X3	WM-186 TR-6	3CA46	Gamma Emitters	²²⁶ Ra	2.13E+05 ^c	pCi/L	2.87E+04		1.88E+04	9.40E+03
CP10100101X3	WM-186 TR-5	3CA34	Gamma Emitters	¹⁰³ Ru	-8.26E+01	pCi/L	2.19E+02	U	5.89E+02	2.95E+02
CP10100201X3	WM-186 TR-6	3CA22	Gamma Emitters	¹⁰³ Ru	-6.08E-02	pCi/L	1.88E+02	U	7.51E+02	3.76E+02
CP10100301X3	WM-186 TR-8	3CA28	Gamma Emitters	¹⁰³ Ru	-6.84E+01	pCi/L	2.37E+02	U	7.42E+02	3.71E+02
CP10100401X3	WM-186 TR-8	3CA40	Gamma Emitters	¹⁰³ Ru	-7.90E+02	pCi/L	1.05E+03	U	7.98E+02	3.99E+02
CP10100501X3	WM-186 TR-6	3CA46	Gamma Emitters	¹⁰³ Ru	-1.73E+02	pCi/L	3.73E+02	U	8.45E+02	4.23E+02
CP10100101X3	WM-186 TR-5	3CA34	Gamma Emitters	¹⁰⁶ Ru	4.09E+01	pCi/L	8.42E+02	U	3.52E+03	1.76E+03
CP10100201X3	WM-186 TR-6	3CA22	Gamma Emitters	¹⁰⁶ Ru	1.75E+03	pCi/L	2.99E+03	U	4.89E+03	2.45E+03
CP10100301X3	WM-186 TR-8	3CA28	Gamma Emitters	¹⁰⁶ Ru	-1.44E+03	pCi/L	2.56E+03	U	4.47E+03	2.24E+03
CP10100401X3	WM-186 TR-8	3CA40	Gamma Emitters	¹⁰⁶ Ru	-1.54E+03	pCi/L	2.70E+03	U	4.61E+03	2.31E+03
CP10100501X3	WM-186 TR-6	3CA46	Gamma Emitters	¹⁰⁶ Ru	6.28E-01	pCi/L	1.22E+03	U	4.81E+03	2.41E+03
CP10100101X3	WM-186 TR-5	3CA34	Gamma Emitters	¹²⁵ Sb	6.38E+03	pCi/L	5.93E+02		1.78E+03	8.90E+02
CP10100201X3	WM-186 TR-6	3CA22	Gamma Emitters	¹²⁵ Sb	4.63E+03	pCi/L	4.78E+02		2.74E+03	1.37E+03
CP10100301X3	WM-186 TR-8	3CA28	Gamma Emitters	¹²⁵ Sb	6.86E+03	pCi/L	5.81E+02		2.63E+03	1.32E+03
CP10100401X3	WM-186 TR-8	3CA40	Gamma Emitters	¹²⁵ Sb	1.36E+04	pCi/L	1.45E+03		2.40E+03	1.20E+03
CP10100501X3	WM-186 TR-6	3CA46	Gamma Emitters	¹²⁵ Sb	1.62E+04	pCi/L	1.40E+03		2.55E+03	1.28E+03
CP10100101X4	WM-186 TR-5	0311034-17	Specific Analysis	⁹⁰ Sr	6.40E+05	PCI/L	9.33E+03		2.90E+03	1.45E+03
CP10100201X4	WM-186 TR-6	0311034-18	Specific Analysis	⁹⁰ Sr	2.78E+06	PCI/L	1.83E+04		2.31E+03	1.16E+03
CP10100301X4	WM-186 TR-8	0311034-19	Specific Analysis	⁹⁰ Sr	1.54E+06	PCI/L	1.30E+04		2.43E+03	1.22E+03
CP10100401X4	WM-186 TR-8	0311034-25	Specific Analysis	⁹⁰ Sr	1.13E+06	PCI/L	1.11E+04		2.53E+03	1.27E+03

Table I-1. (continued).

Field Sample ID	Location	Lab Sample ID	Analysis	Compo und	Result	Units	Uncertainty	Validator Flag ^a	MDA ^b	0.5*MDA
CP10100501X4	WM-186 TR-6	0311034-26	Specific Analysis	⁹⁰ Sr	1.13E+06	PCI/L	1.27E+04		3.62E+03	1.81E+03
CP10100101EA	WM-186 TR-5	3CA36	*ICP-MS TC-99	⁹⁹ Tc	6.07E+02	pCi/L				0.00E+00
CP10100201EA	WM-186 TR-6	3CA24	*ICP-MS TC-99	⁹⁹ Tc	1.55E+03	pCi/L				0.00E+00
CP10100301EA	WM-186 TR-8	3CA30	*ICP-MS TC-99	⁹⁹ Tc	1.25E+03	pCi/L				0.00E+00
CP10100401EA	WM-186 TR-8	3CA42	*ICP-MS TC-99	⁹⁹ Tc	4.42E+02	pCi/L				0.00E+00
CP10100501EA	WM-186 TR-6	3CA48	*ICP-MS TC-99	⁹⁹ Tc	5.85E+02	pCi/L				0.00E+00
CP10100101X3	WM-186 TR-5	3CA34	Alpha Emitters	²³⁴ U	-1.62E+00	pCi/L	2.72E+00	U	8.89E+01	4.45E+01
CP10100201X3	WM-186 TR-6	3CA22	Alpha Emitters	²³⁴ U	6.52E+01	pCi/L	1.02E+02	U	1.52E+02	7.60E+01
CP10100301X3	WM-186 TR-8	3CA28	Alpha Emitters	²³⁴ U	5.25E+01	pCi/L	8.15E+01	U	1.18E+02	5.90E+01
CP10100401X3	WM-186 TR-8	3CA40	Alpha Emitters	²³⁴ U	3.42E+01	pCi/L	5.22E+01	U	6.67E+01	3.34E+01
CP10100501X3	WM-186 TR-6	3CA46	Alpha Emitters	²³⁴ U	1.56E+01	pCi/L	2.57E+01	U	1.36E+02	6.80E+01
CP10100101X3	WM-186 TR-5	3CA34	Alpha Emitters	²³⁵ U	-4.06E+00	pCi/L	6.89E+00	U	5.73E+01	2.87E+01
CP10100201X3	WM-186 TR-6	3CA22	Alpha Emitters	²³⁵ U	2.81E+01	pCi/L	4.52E+01	U	1.07E+02	5.35E+01
CP10100301X3	WM-186 TR-8	3CA28	Alpha Emitters	²³⁵ U	-6.40E+00	pCi/L	1.09E+01	U	6.73E+01	3.37E+01
CP10100401X3	WM-186 TR-8	3CA40	Alpha Emitters	²³⁵ U	-5.87E+00	pCi/L	9.98E+00	U	6.17E+01	3.09E+01
CP10100501X3	WM-186 TR-6	3CA46	Alpha Emitters	²³⁵ U	-3.92E+00	pCi/L	6.62E+00	U	1.11E+02	5.55E+01
CP10100101X3	WM-186 TR-5	3CA34	Gamma Emitters	²³⁵ U	4.49E+03 ^c	pCi/L	7.14E+02		7.35E+02	3.68E+02
CP10100201X3	WM-186 TR-6	3CA22	Gamma Emitters	²³⁵ U	8.48E+02	pCi/L	2.01E+03	U	1.03E+03	5.15E+02
CP10100301X3	WM-186 TR-8	3CA28	Gamma Emitters	²³⁵ U	1.08E+04 ^c	pCi/L	1.70E+03		1.13E+03	5.65E+02
CP10100401X3	WM-186 TR-8	3CA40	Gamma Emitters	²³⁵ U	1.34E+04 ^c	pCi/L	2.09E+03		1.17E+03	5.85E+02
CP10100501X3	WM-186 TR-6	3CA46	Gamma Emitters	²³⁵ U	1.29E+04 ^c	pCi/L	1.73E+03		1.14E+03	5.70E+02
CP10100101X3	WM-186 TR-5	3CA34	Alpha Emitters	²³⁶ U	3.22E+00	pCi/L	5.41E+00	U	8.23E+01	4.12E+01
CP10100201X3	WM-186 TR-6	3CA22	Alpha Emitters	²³⁶ U	3.43E+00	pCi/L	5.77E+00	U	9.89E+01	4.95E+01
CP10100301X3	WM-186 TR-8	3CA28	Alpha Emitters	²³⁶ U	-3.39E+00	pCi/L	5.78E+00	U	4.79E+01	2.40E+01
CP10100401X3	WM-186 TR-8	3CA40	Alpha Emitters	²³⁶ U	7.76E+00	pCi/L	1.29E+01	U	7.21E+01	3.61E+01
CP10100501X3	WM-186 TR-6	3CA46	Alpha Emitters	²³⁶ U	-4.67E+00	pCi/L	7.95E+00	U	8.98E+01	4.49E+01
CP10100101X3	WM-186 TR-5	3CA34	Alpha Emitters	²³⁸ U	0.00E+00	pCi/L	0.00E+00	U	2.18E+01	1.09E+01
CP10100201X3	WM-186 TR-6	3CA22	Alpha Emitters	²³⁸ U	1.89E+01	pCi/L	3.08E+01	U	8.99E+01	4.50E+01
CP10100301X3	WM-186 TR-8	3CA28	Alpha Emitters	²³⁸ U	-6.77E+00	pCi/L	1.16E+01	U	8.88E+01	4.44E+01
CP10100401X3	WM-186 TR-8	3CA40	Alpha Emitters	²³⁸ U	0.00E+00	pCi/L	0.00E+00	U	2.10E+01	1.05E+01

Table I-1. (continued).

Field Sample ID	Location	Lab Sample ID	Analysis	Compo und	Result	Units	Uncertainty	Validator Flag ^a	MDA ^b	0.5*MDA
CP10100501X3	WM-186 TR-6	3CA46	Alpha Emitters	²³⁸ U	0.00E+00	pCi/L	0.00E+00	U	7.23E+01	3.62E+01
CP10100101X3	WM-186 TR-5	3CA34	Gamma Emitters	⁶⁵ Zn	7.45E+01	pCi/L	1.12E+02	U	1.44E+02	7.20E+01
CP10100201X3	WM-186 TR-6	3CA22	Gamma Emitters	⁶⁵ Zn	5.73E+01	pCi/L	1.11E+02	U	2.27E+02	1.14E+02
CP10100301X3	WM-186 TR-8	3CA28	Gamma Emitters	⁶⁵ Zn	3.90E+01	pCi/L	8.66E+01	U	2.04E+02	1.02E+02
CP10100401X3	WM-186 TR-8	3CA40	Gamma Emitters	⁶⁵ Zn	-7.30E+01	pCi/L	1.27E+02	U	2.24E+02	1.12E+02
CP10100501X3	WM-186 TR-6	3CA46	Gamma Emitters	⁶⁵ Zn	-1.82E-01	pCi/L	5.63E+01	U	2.32E+02	1.16E+02
CP10100101X3	WM-186 TR-5	3CA34	Gamma Emitters	⁹⁵ Zr	7.75E+01	pCi/L	1.26E+02	U	1.90E+02	9.50E+01
CP10100201X3	WM-186 TR-6	3CA22	Gamma Emitters	⁹⁵ Zr	4.52E+02 ^d	pCi/L	7.37E+01		3.11E+02	1.56E+02
CP10100301X3	WM-186 TR-8	3CA28	Gamma Emitters	⁹⁵ Zr	2.06E+02	pCi/L	2.83E+02	U	2.80E+02	1.40E+02
CP10100401X3	WM-186 TR-8	3CA40	Gamma Emitters	⁹⁵ Zr	9.37E+02 ^d	pCi/L	1.31E+02		3.15E+02	1.58E+02
CP10100501X3	WM-186 TR-6	3CA46	Gamma Emitters	⁹⁵ Zr	8.62E+02 ^d	pCi/L	8.99E+01	J	3.41E+02	1.71E+02

a. Validator flags:

J=Estimated value

U=Analyte was analyzed for but was not detected.

b. MDA=Minimum detectable activity. $\frac{1}{2}$ MDA was used when reported result is not statistically positive.c. Gamma spectrometry results reported for ²²⁶Ra and ²³⁵U are false-positives (Storms 2004).d. Radionuclide result is a false positive. ⁹⁵Zr is a short half-life (64 days) isotope and is known not to be present due to the age of the tank wastes.